106 - EXTENSION PROGRAM IN CEFD/UFES AQUATIC ACTIVITIES: SERVICE PROPOSAL TO THE COMMUNITY

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Introduction

The modernity reserves for the current society more and more resources for the planning of the most varied activities that people may develop. In that way, concerning health, information and knowledge are developed every day, allowing that each group or individual may use them for their future well-being.

Physical Education, together with other sciences directed to health, is one of the branches that allows us to find knowledge and methodologies that, when applied, credit to the idividuals a quality of life through regular practices of physical activities. Among those, we point out those directed to the health aspects, being in first plan the activities developed in the aquatic environment.

In that sense, the Physical Education and Sports Center of Universidade Federal do Espírito Santo, having as its objective to try to qualify the graduate students' formation in their degree course, from April of 2005, began the *Extension and Social Development Program*, with several corporal practices, among which hydrogymnastics is to assist the community in general.

The offer of hydrogymnastics classes, at the very first moment, achieved feminine groups of different ages, in their majority above 40 years old, trying to reach differentiated objectives, among them: aesthetic purpose, most directed for the group in the age from 40 to 45 years old; medical recommendation, due to the lack of physical activity and also for the individual who presents anomalies or osteoarticular pathology, such as osteoporosis and arthrosis.

The relevance of this article is interpreted in discussing these two pathologies, arthrosis and osteoporosis, as well as the possibilities of the hydrogymnastics practice to contribute in the quality of life of those individuals. **It aims** to introduce a work methodological proposal for the individuals who have arthrosis and osteoporosis, and it may be used in groups that present different characteristics and objectives for the practice of aquatic activities.

Methodology

The study proposes a methodology of hydrogymnastics class, for n = 10 female hydrogymnastics students of the CEFD/UFES extension project, among whom n = 06 present osteo-articular disorder. The application of that proposal will take place in a three months' period, with two 50 minute weekly classes.

Theoretical reference

In modern society, where the capitalist world demands a high productivity, exhausting working days and little time for health cares, it becomes increasing the number of diseases associated to those habits, among which two osteoarticular pathologies stand out: osteoporosis and arthrosis.

Osteoporosis is a disease associated to the reduction of corporal bone mass (osteopenia), being related, mostly, with the normal process of aging. The decrease of bone density is a universal phenomenon of that process, but it becomes a disease, when the bone mass is reduced to such a point that fractures may happen, even in daily common activities, because it drastically reduces the bone resistance.

With the aging, alterations happen in the formation and re-absorption of the bone tissue, increasing the re-absorption process (caused by osteoclasts) and decreasing the formation process (caused by osteoblasts). That process of reduced remodeling is characteristic in both men and women, from the 30 years old on. Women, until they reach about 50 years old or menopause, lose about 0,5-1,0% of bone mass every year. After menopause, it seems there to be a larger bone loss rhythm, which can reach up to 6,5% a year, in the first five to eight years (HALL, 2000).

Concerning arthrosis, it constitutes the most common form of rheumatism. It is a degenerative rheumatic disease that is characterized by the articulation cartilage wearing out, causing attrition between the bones. It is also known as osteoarthrosis or osteoarthrosis. Arthrosis is actually one of the most frequent diseases and one of the main factors of physical incapacity of the elderly, although only some cases reach enough seriousness to determine symptoms and lead to the definitive diagnosis.

Its seriousness can be demonstrated by the data of Social Welfare in Brazil, which registers that the disease is responsible for 7.5% of all work sick-leaves; it is the second disease among the ones that justify the initial-aid.

Although they also attack men, most of the affected people by both osteoporosis and arthrosis are menopausal or pos-menopausal and old women.

On the other hand, those pathologies differ in some aspects. So, osteoporosis can be: idiopathic juvenile (osteoporosis type that attacks young people without defined cause), osteoporosis in children with varied causes, as the genetics, and osteoporosis due to menopause and age. Some risk factors are also important to determine osteoporosis, among which it stands out sedentary life and bad eating habits, that can take to deficiency of nutrients, such as calcium and D vitamin.

Osteoporotic fractures are more frequent in the wrist, in the spine and in the hip. The great majority of fractures takes place due to falls, caused mainly because of balance lack and obstacles in the environment, but they can also originate from bad posture, overweight, among others.

Regarding arthrosis, that disease can be primary or secondary. The primary one endangers articulations that previously were considered normal, not having apparent cause. The secondary one attacks articulations that were injured, independently of the age. The latter has a predisposed factor, particularly the metabolic diseases, anatomical disorders, traumas, arthrosis, infections, hereditariness and obesity.

The hereditariness influence occurs mainly in certain clinical presentations, as the nodules of the fingers, called Heberden nodules (in the tip of the fingers) or Bouchard (in the medium articulation of the fingers). Besides the articulations of the hands, fingers and spine, the most affected articulations by the arthrosis are those that support the body weight.

The most frequent symptom in arthrosis is the articular pain, followed by the volume increase, swelling, local heat, intumescence of the affected joints and articular crackling. In the case of osteoporosis, that disease does not present symptoms until the first fractures appear and it does not present a definitive cure yet.

So, the earlier it is discovered, the easier the treatment will be, which can both minimize the losses and aid in the maintenance and in the gaining of bone mass.

According to *Bandeira et al.* (2000), genetics contributes with the bone mass formation with about 70%, being the remaining dependent on calcium ingestion, physical exercise and sexual hormones.

A balanced feeding and the practice of physical exercises should be maintained from childhood, creating conditions for a good reservation of bone mass and consequently decreasing the future risk of osteoporosis. Besides, in the case of the arthrosis, physical exercise can qualitatively influence in the life of the bearer of that pathology, minimizing the disease effects and preventing as for its clinical evolution.

Therefore, the treatment for both pathologies involves a series of measures, among which are the practice of physical activities and the use of specific medicines. In osteoporosis, supplementation of calcium and D vitamin and hormonal replacement are also added. In arthrosis, the rest is indicated when the patient is with the articulation inflamed or very painful. Those measures together produce a better effect than when separately.applied Next we will broach one of those measures, the physical activity.

Physical activity, hydrogymnastics, osteoporosis and arthrosis

The benefits that physical activity can provide to the individuals who regularly practice it, in general, act in physiologic, psychological and social aspects. Those effects can bring benefits in the control, treatment and prevention of some more incident pathologies in the current population, such as diabetes, heart illness, hypertension, arthrosis and osteoporosis, among others.

In this part, the methodological proposal will concentrate on the effect of physical activity, more specifically of the hydrogymnastics and its actions as auxiliary treatment of osteoporosis and arthrosis. So, according to Molinari (2000), the physical activity practice, when frequently accomplished, acts as a mechanical stimulus on the skeletal system, which responds to overload and muscular contraction causing the bone formation.

Libareli (2005) also adds that recent studies show that both physically active individuals and athletes have a bone mineral density significantly increased when compared with the sedentary controls. A difference that varies from 8 to 30%, independently o the exercise type, confirming the osteogenic effect of physical activities.

These activities also manage to improve the functional performance of the articulations, reduce the need of pharmaceutical use and also have influence on the patient's general status, bringing, in addition, psychological benefits, and can act modifying possible risk factors in the disease progression. The exercises are particularly useful when there is articular instability.

Then, for individuals who have osteoporosis and arthrosis, It becomes imperative to establish a physical activity program aiming at attenuating the clinical condition establishment, interrupting the bone loss (more specific in osteoporosis) and promoting the maintenance of an articulation in normal status for the functional activity of the articulation (in the arthrosis case).

Hydrogymnastics is assigned as physical activity, for being a low impact activity and, in this case, it is an activity that presents smaller risk of lesions and a safer atmosphere for the bearers of the described pathologies, due to the physical properties of water.

According to Paulo (1994), the aquatic environment, with its physical properties and natural overload, provides to the individual who exercises a sensation of the corporal weight decrease, liberation of the articulations, good functioning of the thermoregulatory system, better irrigation activating veins, arteries and capillaries and also involvement of most muscular groups, invigorating muscles by water resistance in multiple directions.

In that way, hydrogymnastics is considered as one of the best physical activity modalities for arthrosis and osteoporosis bearers, indirectly contributing in those individuals' improvement due to several benefits that it provides, as: it strengthens and invigorates musculature; combats flaccidity, improves articular flexibility as well as balance and coordination; increases self-esteem; provides practice of movements that would be difficultly accomplished on the ground; does not cause impact, avoiding falls; favors cardiovascular conditioning.

So, hydrogymnatics cannot be recommended as a substitute for the hormonal therapy or use of medicines, but as a complement in the treatment of the people who have osteoporosis and arthrosis.

Program of hydrogymnatics classes: a work methodological proposal

In the specific plan, the Extension and Social Development Program of the UFES Physical Education and Sports Center offers the community in general several corporal practices, hydrogymnatics being among them.

A work methodological proposal with a heterogeneous group shall comply with some basic demands. Bandeiras (2000) indicates that, for osteoporotic patients, the activity should have usefulness daily. For the arthrosis bearers, the following benefits are mentioned: it does not offer danger risk, for instance, of falls; increases the ability of these people of accomplishing routine and domestic activities; reduces the risk of fractures day by day.

It should also be emphasized some points that should be worked in this program: aerobic activities, muscular invigoration, mainly of the postural, abdominal muscles, and inferior limbs, breathing exercises, relaxation to relieve tensions.

This proposal will be developed in three months, for the female students of the project. The classes will be accomplished twice a week, with duration of fifty minutes, being organized in the following way:

1st Part (8 minutes): *Preparation for the activity*. In this part stretching and heating of the articulations will be developed.

2nd Part (30 minutes): *Specific Part in aquatic environment.* This moment will be divided in three specific working sections. So, Section 1 - we will begin our program with the aerobic activities, in order to work and improve the cardio-breathing conditioning, factor that will secondarily aid in the treatment of the pathologies: arthrosis and osteoporosis. Among the worked activities, there are walking, movement of arms, skis, runs in several directions, runs with leg elevation to 90º, little jumps, punches.

Section 2 - on this moment the strength work will be emphasized, in order to bring improvements in the muscle-skeletal function, as well as in the osteogenesis process. The prioritized exercises for superior limbs will be for pectoral, triceps, biceps, backs and shoulder also working postural muscles. For lower limbs, exercises will be accomplished for calf, quadriceps, buttocks, adductors and abductors among others. Section 3 (5 minutes)-abdominal exercises.

3rd Part (7 minutes): *Relaxation.* Breathing exercises with slow movements of arms, fluctuations with and without exercising tubes.

In table 1, the following division into periods was schematized for sections 1 and 2:

Number of classes	Working section
4 classes	Adaptation period: - 1 - 20 minute section - low moderate intensity - 2 - 10 minute section– low moderate intensity
4 classes	- 1 - 20 minute section – moderate intensity - 2 - 10 minute section – moderate intensity
8 classes	- 1-15 minute section – high moderate intensity - 2 - 15 minute section – moderate intensity
4 classes	- 1-10 minute section – high intensity - 2 - 20 minute section – high moderate intensity
4 classes	- 1 -10 minute section – high intensity - 2 - 20 minute section – high intensity

The used materials vary according to availability of each institution. For this program, exercising tubes and floaters will be available.

So, there is precaution of thinking in a routine of exercises trying to eliminate components that can bring some risk to the students. In that way, choosing safe and motivating exercises is fundamental.

Discussion

Besides the prevention of those pathologies, the methodological proposal seeks to minimize bone losses, pains and discomforts. It also aims at improving factors, as flexibility, muscular strength, balance and weight loss, which contribute secondarily in the treatment and in the prevention of those diseases.

Besides the functional benefits, the hydrogymnatics practice also works the psycho-social side, because this one is accomplished in an amusing and relaxing atmosphere, which also allows a closer social intercourse which many times gets lost with the aging process.

After a hydrogymnatics practice period, it will be sought through medical report to confirm what this study intended to do: the hydrogymnatics benefit in the arthrosis and osteoporosis treatment.

Conclusion

After initiated the pathological process of articular wearing out and bone loss, the most that can be done is to minimize those damages, therefore the best form to fight those diseases is still prevention. Thus, healthy life habits and the practice of physical activities are fundamental during a lifetime.

The hydrogymnatics highlight is in being accomplished in a safer atmosphere, due to the physical properties of water, and it becomes fundamental, once most of the population attacked by those pathologies are the old one.

Although hydrogymnatics presents positive effects in the arthrosis and osteoporosis treatment, mainly in what concerns to the secondary factors - for instance, balance increase, muscular invigoration, weight decrease, flexibility increase - it cannot be used separately as a treatment. Appropriate postures and healthy feeding are fundamental. The supplementation of vitamins and minerals, as well as the use of medicines and hormones may also be necessary in some cases.

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EXTENSION PROGRAM IN CEFD/UFES AQUATIC ACTIVITIES: SERVICE PROPOSAL TO THE COMMUNITY

The Physical Education and Sports Center of Universidade Federal do Espírito Santo began the *Extension and Social Development Program*, in April of 2005, this program counts on several corporal practices that seek to assist the community in general, hydrogymnatics being among them. The search for hydrogymnatics classes was exclusively by feminine public, with differentiated purposes, as medical recommendation, for presenting anomalies or osteoarticular pathology, as osteoporosis and arthrosis. The article aimed at introducing a methodological proposal of hydrogymnatics activities that seeks to minimize the damages caused by arthrosis and osteoporosis, providing improvements in several functions of the individuals who have those pathologies. In order to do it, a survey of the theoretical references that debate the hydrogymnatics, osteoporosis and arthrosis theme was accomplished .It is evident in the literature that, after initiated the pathological process of articular wearing out and bone loss, the most that can be done is to minimize these disorders. Healthy life habits and the practice of physical activities are fundamental during a lifetime. Then It is concluded that hydrogymnatics has positive effects in those individuals' treatment, mainly concerning secondary factors, but it cannot be used as the unique treatment.

Key-words: Hydrogymnatics. Osteoporosis. Arthrosis.

PROGRAMME D'EXTENSION EN ACTIVITÉS AQUATIQUES DU CEFD/UFES : PROPOSITION DE SERVICES À LA COMMUNAUTE

Le Centre d'Education Physique et des Sports de l'Université Fédérale de l'état de Espírito Santo en avril 2005, a commencé le *Programme d'Extension et de Développement Social*. Ce programme comporte plusieurs pratiques corporelles qui visent à servir la communauté en général, l'une d'entre elles étant l'aquagym. La recherche des cours de l'aquagym a été exclusivement de la part du public féminin, avec des buts différents, comme la recommandation médicale, dûe à des anomalies ou pathologies ostéoarticulaires, comme l'ostéoporose et l'ostéoarthrite. Cet article a pour but de lancer une proposition méthodologique d'activités d'aquagym qui visent à minimiser les dégâts de l'ostéoarthrite et l'ostéoporose, visant à améliorer les diverses fonctions des individus porteurs de ces pathologies. À cette fin, fut réalisée une étude des référentiels théoriques qui débattent la thématique aquagym, l'ostéoporose et l'ostéoarthrite. Il apparaît dans la littérature que, une fois initié le processus pathologique de l'usure articulaire et de la perte de la masse osseuse, tout ce que l'on peut faire est minimiser les dégâts. Des habitudes de vie saine et la pratique d'activités physiques sont fondamentales durant toute la vie. On conclut donc, que l'aquagym possède des effets positifs dans le traitement de ces individus, principalement en ce qui concerne les facteurs secondaires, ne pouvant cependant être traité comme seul traitement.

Mots-clé : Aquagym. Ostéoporose. Ostéoarthrite.

PROGRAMA DE EXTENSIÓN EN ACTIVIDADES ACUÁTICAS DEL CEFD/UFES: PROPUESTA DE ATENCIÓN À LA COMUNIDAD

El Centro de Educación Física y Deportes de la Universidad Federal de Espírito Santo, en abril de 2005, inició el *Programa de Extensión y Desarrollo Social*. Ese programa cuenta con diversas prácticas corporales que buscan atender a la comunidad en general, estando entre ellas la hidrogimnasia. La búsqueda por las aulas de hidrogimnasia fue exclusivamente por el público femenino, con finalidades diferenciadas, como recomendación médica, por presentar anomalías o patología osteoarticulares, como la osteoporosis y artrosis. El artículo tuvo como objetivo lanzar una propuesta metodológica de actividades de hidrogimnasia que busca minimizar los daños de la artrosis y osteoporosis, proporcionando mejorías en las diversas funciones del individuo portador de esas patologías. Para eso, fue realizada investigación de los referenciales teóricos que debaten la temática hidrogimnasia, osteoporosis y artrosis. Consta en la literatura que, después de iniciado el proceso patológico del desgaste articular y de la pérdida ósea, lo máximo que se puede hacer es minimizar esos daños. Hábitos de vida saludables y la práctica de actividades físicas son fundamentales durante toda la vida. Se concluye, entonces, que la hidrogimnasia posee efectos positivos en el tratamiento de esos individuos, principalmente en lo que se refiere a los factores secundarios, no pudiendo

ser utilizada como único tratamiento. **Palabras-llave**: Hidrogimnasia. Osteoporosis. Artrosis.

PROGRAMA DE EXTENSÃO EM ATIVIDADES AQUÁTICAS DO CEFD/UFES: PROPOSTA DE ATENDIMENTO À COMUNIDADE

O Centro de Educação Física e Desportos da Universidade Federal do Espírito Santo, em abril de 2005, iniciou o *Programa de Extensão e Desenvolvimento Social*. Esse programa conta com diversas práticas corporais que visam a atender à comunidade em geral, estando entre elas a hidroginástica. A procura pelas aulas de hidroginástica foi exclusivamente pelo público feminino, com finalidades diferenciadas, como recomendação médica, por apresentar anomalias ou patologia osteoarticulares, como a osteoporose e artrose. O artigo objetivou lançar uma proposta metodológica de atividades de hidroginástica que visa a minimizar os danos da artrose e osteoporose, proporcionando melhorias nas diversas funções dos indivíduos portadores dessas patologias. Para isso, foi realizado levantamento dos referenciais teóricos que debatem a temática hidroginástica, osteoporose e artrose. Consta na literatura que, depois de iniciado o processo patológico do desgaste articular e da perda óssea, o máximo que se pode fazer é minimizar esses danos. Hábitos de vida saudáveis e a prática de atividades físicas são fundamentais durante toda a vida. Conclui-se, então, que a hidroginástica possui efeitos positivos no tratamento desses indivíduos, principalmente no que diz respeito aos fatores secundários, não podendo ser utilizada como único tratamento.

Palavras-chave: Hidroginástica. Osteoporose. Artrose.