29 - FLEXIBILITY IN WUSHU PRACTITIONERS: A COMPARISON BETWEEN STATIC METHOD AND METHOD OF FACILITATION NEURO-PRÓPRIOCEPTIVO

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INTRODUCTION

The Martial Arts are known by taking its mental practitioners to the maximum development of its potentialities, physics (NATALI, 1984). The Kung fu is the Chinese Martial Art, that if became Olimpic sport in 2000, will have its first presentation in the olimpics games on Pequin in 2008. Olimpc Kung fu is called Wushu, and its modalities of competition are the Tao Lu (sequence of movements), that it can be obligatory (daily pay-definitive) or exempts and the Duilian (combined fight, with or without weapons). The beauty of the movements of the Tao lu and the Duilian inhabits in the speed, force, agility and in flexibility. The last physical valence, flexibility, is a highly necessary question, as if it can see in figure 1. To leave of this comment, it was formulated following question: How to improve the flexibility of the practitioners of Wushu? Based in specific literature, if it considers the comparison enters two methods for the improvement of this physical valence, being these the static method and the method of neuro-próprioceptiv facilitation (PNF).

Figure 1: Changquan



Source: www.wushucentral.com

THE WUSHU

The first historical register of this Martial Art Chinese date of the year of 2674 a.C. (NATALI, 1984). In elapsing of this time it was used as self-defense; armed and disarmed combat for the Chinese military forces; segregation between apt and inapt and finally, as sport. It reached its space as olimpic sport in 2000 and in 2008 the city of Pequin (China) will go to host the Olimpic games with the first presentation of the Wushu as Olimpic sport. The techniques of the Wushu they englobam great number of jumps, falls, punches and kicks. The precision, balance, force, speed and flexibility, constitute the elements of the biggest relevance to the eyes of the arbitrators (FKFERJ, 2000). The "Nandus" (elements of difficulty varied with specific punctuations) values movements of equal or superior amplitude the 180° in kicks frontals and laterals, beyond kicks with jumps that culminate with the position of opening of legs of 180°. Configuring in this way the obligatoriness of high levels of flexibility of the joint lame person-femoral in practitioners of Wushu.

THE FLEXIBILITY

As Dantas (2003) flexibility is the physical valence that becomes possible a voluntary movement of maximum angular amplitude for a joint or set of joints, limited structurally, is of risk of injuries. Some authors recognize that flexibility is an important variable for diverse sports and physical activities. In certain sports flexibility is same a highly necessary variable, as it is the case of the Olimpic Gymnastics, and also the focus of this study, Wushu (HENDRIK, 2001; BOMPA, 2000). According to Bompa (2000), flexibility must be the base of the work, an variable to be developed in the initial phases of the training. Of ownership of the conceptual base on what it is flexibility, one becomes interesting to search to understand as the adaptation to the training occurs. The involved structures offer to resistance in greater or minor ratio, as if it can observe below in picture 1. Hendrick (2001) defends the use of the dynamic training of flexibility. The same it defends the specific form, corroborating with some authors (TUBINO, 2003; DANTAS, 2003; BOMB, 2000). The author affirms that the training must be specific, or either, dynamic. The problematic one in to measure the flexibility of dynamic form is a that it limits factor, taking the physical trainers to remain with the not dynamic methods.

Picture: Resistance to flexibility

Structure	% resistance
1- Capsule to articulate	47%
2- Muscle	41%
3-Tendon	10%
4- Skin	2%

Source: Dantas, 2003

The flexionamento exercises can be used to increase the amplitude to articulate, and it can clearly be observed that distinct methods, as well as intensities and varied volumes, determined periodização, allies to the biological individuality had determined the improvement or maintenance of the degree of existing flexibility (DANTAS, 2003; FOSS and KETEYAN, 2000; DANTAS and TO SOUND, 2003; KNUDSON, MAGNUSSON and McHUGH, 2000). The methods of training used to increase flexibility are: a) method static, b)balístico and c)facilitação to neuromuscular proprioceptiva (FNP). Static A)- method: pupil or athlete is the method in which must carry through a slow movement until its threshold of pain or discomfort and be remained in this

position. It seems that this method is used and consequently the most known, probably due to easiness in it learns it and it applies it, to the lesser incidence of injuries and its efficiency. As Moore (1980) and Osterning (1990 apud I CASTRATE and SIMÃO, 2002) this seems to be the method safest for the flexibility training. In this method it is diminished excitabilidade of the motoneurônios alpha, had the lesser speed, generating better adaptations to fabrics conjunctive and muscular what it seems to favor the properties mechanical (VUJNOVICH, 1994 apud I CASTRATE and SIMÃO, 2002). The low consumption of energy, the relaxation for this generated, and the lesser suffering of the muscles submitted to this method directs it to the use applied to the treatment of the algias (DEVRINES, 1981 apud I CASTRATE and SIMÃO, 2002). Ballistic B)-Método: in this method it is praised accomplishment of 10 the 20 repetitions of data movement (kicks for example), carrying through a forced allonge. For this characteristic of execution the activation of the muscular spindle occurs, generating the miotático consequence, becoming this painful and inclined work the injuries (DANTAS, 2003). To facilitate the understanding, the ballistic procedure for the posterior muscles of thigh will be mentioned here: The individual assumes as initial position the aiming of the member that will slightly suffer the ballistic allonge behind, then gives beginning to a movement of flexão of the hip of the inferior member that is behind, saw movement ballistic (kick) keeping an extension of knees. At this moment the agonistas of the allonge (isquiotibiais) become the antagonists of the flexão of the hip offering resistance this movement saw miotático consequence of the same ones. c) - Method of neuro-proprioceptiva facilitation (FNP): methods that have its origin in the studies of Kabat (1952 apud Dantas, 2003). Still according to exactly author, these if present as the ones that better have resulted. In the beginning, the FNP methods were used solely for the whitewashing and therapy, however in 1967 Holtz it used them to develop method SCIENTIFIC STRETCHING WILL BE SPORTS, 3S (DANTAS 2003). This method was first of many the other servant to leave of this time. The FNP methods enjoy of good status amongst the methods of training of flexibility, being recommended side by side with the passive method (KNUDSON, MAGNUSSON, McHUGH, 2000).

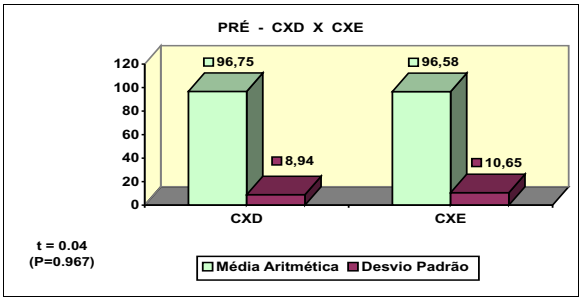
MATERIALS AND METHODS

For this work had been selected 12 individuals of 24,2? 2,7 years, all of the masculine sort, representing one show of the population of practitioners of kung fu olimpic of the city of Rio das Ostras-Rio de Janeiro that is approximately 60 practitioners. The individuals had been informed of all the procedures to which would be submitted in such a way during the tests daily pay and after-training, how much to the training that would be carried through during the 12 (twelve) weeks of intervention. The same ones had agreed and signed the assent term, in the sequence the tests had been carried through in days 16 and 20 of February of the same year. The measurements after-training had occurred in day 22 of May of the same year, having thus configured a period of 12 weeks of training. Goniômetro was used mark GARCI (GARCI IND. E WITH OF APAR. CIRUR. E ORTOP. LTDA - São Paulo, BRAZIL), following the protocol of goniometria considered for Fernandes Filho (2003) in its book the practical one of the physical evaluation. The choice of this protocol if gives due to its high validity, fidedignidade and objetividade. It was measured it flexibility of the joint lame person-femoral (CXD - lame right and CXE - lame left) of each individual, with goniômetro mark GARCI, procedure this carried through in day 16 of February and repeated in day 20 of same month to keep a good trustworthiness of the measures. The accomplishment of the tests if gave with the citizens in dorsal decubitus, having the joints of both the knees kept in extension during the tests, pelve of the individuals also was attention object, where if it searched to keep it in the ground. The inferior member (MMII) tested was lead for the appraiser until testing told maximum sensation of pain or discomfort, represented for the scale of subjective perception of pain of Borg as number 10 (BORG, 2000). When locating this point was done the measure with goniômetro and registered the value in angles. In this study it was opted to not forming groups it has tested and it controlled, but, distinct interventions in the same individual. Being thus, MMII the left was submitted to the FNP method, while MMII the right was subjected to the static method, however, both in passive way. The percentages of training as well as its intensities had obeyed as referencial the scientific principles of porting training (BOMPA, 2004; DANTAS, 2003; TUBINO, 2003; PLATANOV, 2001; GOMES, 2002; VERKHOSHANSKI, 2001). As the training he was distinct between the MMII, is described to follow as if they followed the same ones: For MMII the left method FNP was used, where in the same position used in the test the individual suffered the intervention from the trainer who lead the segment until its maximum limit (activation of the spindle) and requested to testing that he carried through a contrary it has led or moderate contraction to the action of the allonge, stimulating the OTG, after 8 (eight) seconds of this contraction the trainer made a new intervention leading the segment to a new limit maximum, until arriving the angle prescribed in the training spread sheet. When arriving in the cited angle the trainer would keep testing in this angle for a time of 20 (twenty) seconds, passed this time the appraiser leads MMII the trained one to the initial position. For MMII the right he opted himself to using the static method, where the first steps are identical to the previous example (FNP). However, when arriving at the maximum limit of discomfort or pain, the trainer keeps the immovable segment per 20 (twenty) seconds, in case that it is the prescribed angle, the trainer leads the segment to the initial position, in case that contrary, the trainer will have to wait the 20 (twenty) seconds and to try to lead the segment again, until if he arrives at the prescribed angle, where if waited the 20 (twenty) second ends, before leading the segment to the initial position.

ANALYSIS OF THE DATA

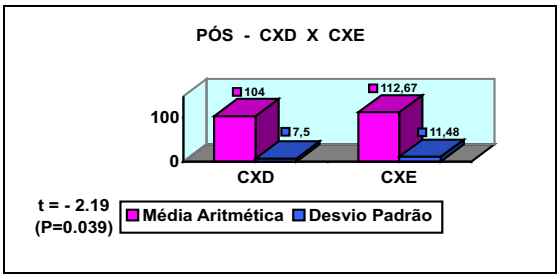
In the present study had been calculated: Arithmetical a) Averages, shunting lines standards; b)Test "t" of Student, for comparison of the arithmetic means of two independent groups; c)Test in pairs t, for comparison of the arithmetic means, at the moments daily pay and after. The level of significance of 5% of probability was adopted, (P?0.05) second, Rodrigues (2002). The results follow below as: DAILY PAY - CXD X CXE CXD Arithmetic mean = 96,75 Shunting line Standard = 8,94 CXE Arithmetic mean = 96,58 Shunting line Standard = 10,65 For comparison of the arithmetic means at the moment daily pay between the right thigh and the left thigh, was used test "t" of Student. t = 0,04 (P=0.967) Not Significant one. The arithmetic means do not present significant difference.

Graph 1: CXD X CXE daily pay training



AFTER - CXD X CXE CXD Arithmetic mean = 104,0 Shunting line Standard = 7,50 CXE Arithmetic mean = 112,67 Shunting line Standard = 11.48 For comparison of the arithmetic means at the moment after between the right thigh and the left thigh, test "t" of Student was used. t = - the 2,19 (P=0.039) * Significant to the 5% level arithmetic means present significant difference, with raised values more in the left thigh as it shows the arithmetic mean, as it can be evidenced in graph 2

Graph 2: CXD X CXE after training



As if it can observe above in the displayed statistical treatment, both the training had demonstrated a significant growth of the amplitude to articulate lame person-femoral. However, when it is compared CXD and CXE at the moments daily pay and after-training, a sharper increase in MMII the left, submitted to the training for FNP is observed, as seen in table 1.

Table 1: Comparing resulted

CX	Average before	Average later
CXD	96,75± 8,94	104,00± 7,50
CXE	96,58 ± 10,65	112,67± 11,48

For the adepts of the Wushu the practical one of activities that develop flexibility is part of the training routines. Those that already they possess an adequate flexibility to its necessities of performance continue training the same one, however with the maintenance objective, or either, with lesser volume and intensities. To if observing graph 1, it is possible to verify that it does not have significant difference between CXD and CXE at the moment daily pay-training. However when observing graph 2, meets a difference significant (P=0,039), in the 5% order, marked for a superiority of the CXE. It is to salutar to comment that this segment was trained with method FNP.

CONCLUSION

After the analysis and quarrel of the results are possible to notice that both the training investigated in this study produce positive effect in the profit of amplitude for the studied joint. However, method FNP, demonstrated resulted superior to the static method. Such results suggest that such method of training more is adjusted to develop the physical valence flexibility in the studied group, or either, the evaluated practitioners of Wushu. It is suggested that other studies are carried through with bigger samples and diverse populations to investigate if the effect are distinct in people of another sort, ethnic group, distinct sports and sedentary, aiming at to clarify the subject still more, it has seen, that the same still it lacks of other scientifically measurable information.

BIBLIOGRAPHICAL REFERENCES

BOMPA, Tudor O. **Periodização teoria e metodologia do treinamento.** 4. ed. Rio de Janeiro: Phorte editora, 2002.
BORG, Gunnar; **Escalas de Borg para a dor e o esforço percebido.** 1 ed. São Paulo. Manole, 2000.
CASTRO, Luiz E. V. & SIMÃO, Roberto; **Flexibilidade e seu treinamento.** São Paulo. Artigo de revisão. Universidade Gama Filho, 2002.
DANTAS, Estélio H.M. **A prática da preparação física.** 5. ed. Rio de Janeiro: Shape, 2003.
DANTAS, Estélio H.M. & SOARES, Juliana S. **Flexibilidade aplicada ao personal training**. http://www.saudeemmovimento.com.br, 2003.
FEDERAÇÃO DE KUNG FU DO ESTADO DO RIO DE JANEIRO, **Regras internacionais de arbitragem do kung fu.** RJ: FKFERJ, 2001.
FERNANDES FILHO, José. **A prática da avaliação física.** 2 ed. Rio de Janeiro, Shape, 2003.
FOSS, Merle & KETEYIAN, Steven; **Fox bases fisiológicas do exercício e do esporte.** 6. ed. Rio de Janeiro: Guanabara Koogan, 2000.
GOMES, Antonio C. **Treinamento desportivo: estruturação e periodização**. Porto Alegre. Artmed, 2002.
HENDICK, Allen; **Flexibility training for range of motion**. NCSA's Performance training journal, vol. 01 nuber 2, 2001.
KNUDSON, Duane V.; MAGNUSSON, Peter; McHUGH, Malachy. **Currents inssues in flexibility fitness.** Research digests, serie 3, vol. 10, 2000.
NATALI, Marco; **O soco de uma polegada de Bruce Lee.** São Paulo: Ediouro, 1984.
PLATANOV, V.N. **Teoria geral do treinamento olímpico**. Porto Alegre, Artmed, 2004.
POWERS, Scott & HOWLLEY, Edward; **Fisiologia do exercício.** 3. ed. São Paulo: Manole, 2000.
RODRIGUES,P.C., Bioestatística, 3ª edição, EDUFF, UFF, Niterói, RJ, 2002, 329pg.
SIMÃO, Roberto *et al* ; **Influência do aquecimento específico da flexibilidade no teste de 1RM.** Revista brasileira de fisiologia do exercício vol. 02, 2003.
TUBINO, Manoel J.G., **Metodologia científica do treinamento desportivo**. 13 ed. São Paulo: Shape, 2003.

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Abstract

The present study it presents as original article where the effect of two distinct types of training for flexibility, the static method and the method of proprioceptivy neuro facilitation had been compared , the PNF. For such a group of practitioners of Wushu, (the Kung fu in its Olímpica modality) if submitted to the mensuração of the degree of freedom to articulate of both the sides of the lame person-femoral. This measure was registered in angles by means of one goniômetro. After this procedure the individuals had been submitted to the training for one period of time of 12 (twelve) weeks, where the inferior member (MMII) left was submitted to the training for PNF, while MMII the right to the static training. After the 12 (twelve) weeks of training the data had been compared by test T of student, where met a trained superior result for the MMII with method PNF, P= 0,05 (P=0.039) * Significant to the 5% level. Such difference corroborates with diverse research, demonstrating the efficiency of method PNF.

Word-key: Flexibility, allonge and kung fu

Abstrait

La présente étude qu'elle présente en tant qu'article original où l'effet de deux types distincts de formation pour la flexibilité, la méthode statique et la méthode de neuro- facilitation proprioceptivy avait été comparé, le PNF. Pour un tel groupe de praticiens de Wushu, (le Kung fu dans son modalité d'Olímpica) si soumis au mensuração du degré de liberté à articulez les des deux les côtés du boiteux personne-fémoral. Cette mesure a été enregistrée dans les angles au moyen d'un goniômetro. Après ce procédé les individus avaient été soumis à la formation pendant une période de 12 (douze) semaines, où le membre inférieur (MMII) laissé a été soumis à la formation pour PNF, tandis que MMII la droite à la formation statique. Après les 12 (douze) semaines de la formation les données avaient été comparées par l'essai T de l'étudiant, où réuni un résultat supérieur qualifié pour le MMII à la méthode PNF, P= 0.05 (P=0.039) * significatif au niveau de 5%. Une telle différence corrobore avec la recherche diverse, démontrant l'efficacité de la méthode PNF.

Mot-clef : Flexibilité, d'allonge et de kung fu

Extracto

El presente estudio es um artículo original donde el efecto de dos tipos distintos de entrenamiento para la flexibilidad, el método estático y el método de facilitación neuro proprioceptivy (FNP) habían sido comparados. Para tal, um grupo de praticantes del Wushu, (el Kung fu en su modalidad de Olímpica) quedarán sometido al mensuração del grado de libertad a articulación de ambos los lados de la articulación coxo-femoral. Esta medición fue colocada en ángulos por medio de un goniômetro. Después de este procedimiento habían sometido a los individuos al entrenamiento para un período de um tiempo de 12 (doce) semanas, donde sometieron al miembro inferior (MMII) isquierdo al entrenamiento ppor medio de la FNP, mientras el MMII de la derecha al entrenamiento estático. Después de las 12 (doce) semanas del entrenamiento los datos habían sido comparados por la prueba T studant, donde se quedo un resultado superior al MMII entrenado con el método PNF, P= 0.05 (P=0.039) * significativo al nivel del 5%. Tal diferencia corrobora con investigaciónes diversas, demostrando la eficacia del método FNP.

Palabra-llave: Flexibilidad, elongación y kung fu

Resumo

O presente estudo se apresnta como artigo original onde foram comparados os efeitos de dois tipos distintos de treinamento para a flexibilidade, o método estático e o método de facilitação neuro proprioceptiva, o FNP. Para tal um grupo de praticantes de Wushu, (o Kung fu em sua modalidade Olímpica) se submeteu à mensuração da amplitude articular de ambos os lados da coxo-femoral. Esta mensuração foi registrada em ângulos por meio de um goniômetro. Após este procedimento os indivíduos foram submetidos aos treinamentos por um periodo de 12 (doze) semanas, onde o membro inferior (MMII) esquerdo foi submetido ao treinamento por FNP, enquanto o MMII direito ao treinamento estático. Após as 12 (doze) semanas de treinamento os dados foram comparados pelo teste T de student, onde encontrou-se um resultado superior para o MMII treinado com o método FNP, com P= 0,05 (P=0.039)* Significativo ao nível de 5%. Tal diferença corrobora com diversas pesquisas, demonstrando a eficiência do método FNP.

Palavras-chave: Flexibilidade, alongamento e kung fu.