139 - EFFECT OF TRAINING PLIOMETRIC IN KARATE PRACTITIONERS

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Introduction

The martial arts have history of milênios where they had evolved of the war for the sport (NATALI, 1984). Karatê is one of the modalities of existing older martial arts. Karatê arrived in port in Tokyo, in the decade of 1920, brought of the archipelago of Okinawa, located in the south extremity of Japan (BARRIER and MASSINI, 2006). In 1922, karatê introduced in Tokyo, through Gichin Funakoshi (LAGE and GONÇALVES, 2003). The name "Karatê-do" means way of the empty hands, and therefore its techniques had been based on blows (kicks, socos, falls, among others). Leaving of this concept, one becomes necessary studies related to the techniques that this modality engloba. Therefore, the importance of a physical preparation is evidenced for the attainment of better resulted in terms of physiological profits, in view of that the Karatê demands a series of refined physical valences so that the practitioner can put into motion itself, to brandish socos, kicks, defenses and esquivas in the lesser possible time and adequate power. Objectives To analyze the Karatê under the vision of the porting training, verifying the effect of the pliométrico training under this modality, comparing its effect with the ones of the traditional training, arguing its validity and application under this clientele. Face to the scarce referring bibliographical material to this subject, the present study destines it the questioning of this method of training, supplying subsidies athlete, technician and physical preparadores of this sport, aiming at to maximize its expectations in this modality, bringing an experimental referencial.

Analyzing the Karatê

Observing the Karatê under the prism of the porting training, predominance of the energy way is identified to it anaerobic láctica. It is also observed that the blows (socos kicks and projections), are brandished with force and speed, leading to the following connection: Force X speed = power. Knowing itself that power is an essential capacity in the sport (FOSS & KETEYIAN, 2000), also that power is the combination between force and speed (USHIDA; et al, 2003) and still, power is the capacity to generate maximum force in a short space of time (BOMPA, 2001); (ANSELMI, 2002). A cinésiologica analysis also is interesting, so that the work is most rational and specific possible (BOMPA, 2002). For such he is necessary that if it analyzes the movements, identifying the primary engines, being thus, secluded it movement in groups of blows as it follows below: ü SOCOS: Pectoral greater, pectoral minor, brachial, brachial deltoid, tríceps, brachial biceps. ü KICKS: Femoral Quadríceps, glúteo medium, tensor of the fascia can, expositories of the thigh, posterior of the thigh. ü PROJECTIONS (FALLS): Great dorsal, eretores of the spine, abdominal rectum, transverso abdominal and oblique abdominal. To leave of these data and one brief bibliographical revision, it confides question: Can the pliométrico training improve the performance of the athletes of karatê? Many studies point this type of training as an efficient method of training to improve the muscular power (SAINT; JANEIRA; MAYAN, 1997); (UGRINOWITH & BARBANTI, 1998); (FLECK & KRAEMER, 1999); (BERARD; OF FACE; CAPPA, 2000); (BADILLO & AYESTARÀN, 2001); (BOMPA, 2002); (DANTAS, 1995; apud, NERY & BRINK, 2002); (MAZZEO, 2002); (BARNES, 2003); (VRETAROS, 2003); (BOMPA, 2004). However great part of these studies, says respect only to the MMII, little was written regarding the MMSS. Soon, one becomes necessary that if it verifies the possible improvement of power of the MMSS with the pliométrico training, in special for this modality.

Muscular power and the pliometric training

The explosive exercises if have become very popular in the porting way, being faced for the professionals in porting training as an important ally in the search for an improvement in the performance of athlete of diverse porting areas. Such exercises promote things among others a bigger neural activation, improving the reply of the muscle in quality (force) and speed, (UGRINOWITH & BARBANTI, 1998); (FLECK & KRAEMER, 1999); (BADILLO & AYESTARÁN, 2001); (BOMPA, 2002); (MAZZEO, 2002). Studied since the decade of 1950 the pliométrico training, also CAE call (Ciclo of the allonge and shortening), has its direct performance in mechanical and physiological structures, using to advantage the elastic force of the muscle. The studies of this type of training had disclosed the existence of three elements that act in sinergia during its execution, are they: a) Contrátil element, that is the actina-miosina maquinário, b) elastic Elements in series, located in the head of miosina and the tendões, c) elastic Elements in parallel, being they weaveeed them connective of the esqueléticos estriados muscles (MAZZEO, 2002), (HILL, 1950, apud UGRINOWITH & BARBANT, 1998). Studies regarding the efficiency mechanics of the CAE disclose that the mechanical income of the concentrical contraction of the CAE is bigger (about 20%) that that one carried through separately. In other words, to carry through a work (concentrical contraction) little oxygen is consumed during the contraction of the CAE of that in the common concentrical contraction, (CAVAGNA, 1965, 1968, apud BADILLO & AYESTARÁN, 2001). The CAE has been wide used for the cited advantages already, and the fact to bring good results in short period of training, or either, in lesser space of time (KOMI, 1984, apud SAINT; JANEIRA; MAYAN, 1997). A not scientific fact that demonstrates in simple way and objective (still that empirical) the biggest power of the CAE is the following one: If a person carries through a preceded slew of an daily pay-allonge, its jump is generally superior to the jump that does not use such procedure, (ASMUSSEN, 1974, apud BADILLO & AYESTARÁN, 2001). Although it has this scientific basement all still not if it knows as accurately the CAE provokes the improvements in the muscular power, if this occurs for an improvement of the elasticity of the muscle and the tendão, or for a neural, on facilitation to the miotático consequence, (BADILLO & AYESTARÁN, 2001). The pliométrico training and the miotático consequence During the accomplishment of the pliométricos exercises the use of the daily pay-allonge exists (that it precedes the concentrical phase), this in turn goes off the miotático consequence. This mechanism functions as it follows below: When the muscular spindle occurs the abrupt allonge of the muscle also is prolongated, this immediately converts this stimulaton into sensitive information that runs for the afferent neuron in direction to the sensitive ganglion (located outside of the spinal marrow), and this takes such information to corno posterior of the marrow. In the sequence this information goes to corno previous for intermediary of the Inter-neurons (responsible neurons for the communication among others neurons). Soon the motor reply it follows for the way eferente (motor neurons) until the junction to neuromuscular (motor unit), unchaining the contraction of this muscle, eliminating the allonge of the spindle. All this operation leads around 30 thousandth of second, since the speed of conduction of the nervous stimulaton varies of 1 the 120 meters for second, depending on the bore of the fiber, (AXE, 1993); (EKMAN, 2000); (BADILLO & AYESTARÁN, 2001); (JUNIOR, 2002); (BOMPA, 2004). It fits to mention that the staple fibres calibrosas, have its involved axônio for a lipoprotéica case call case of mielina. In the intervals of such case a differentiated cell called cell Schwann coats the discovered parts of the axônio, forming spiral rings to its redor. To a distâcia of 1 2 mm these structures (case of mielina and cell of Schwann) are interrupted by one third unit, the Nodule of

Ranvier. The case of mielina isolates the axônio, while the Nodule of Ranvier allows that the depolarization of the axônio occurs, promoting "saltatório" a nervous impulse, or either, the stimulaton despolariza the membrane of the neuron and this stimulaton travels for the axônio "jumping" of a Nodule of Ranvier to another one, increasing the speed of the stimulaton, in great mielinizados neurons this 120 speed can arrive m/s, speed this many times superior of the neurons not mielinizados, (McARDLE, KATCH and KATCH, 2003).

Materials and methods

For the accomplishment of this study twelve intermediate practitioners of karatê with ages between 18 had been selected and 28 years, being these divided in two groups, with six elements each one, the group and group B. Had an element of the feminine sex in each group. The two groups had been submitted the tests of muscular power, being the test of hurl of medicine ball for the MMSS and the test of the horizontal jump for the MMII (JOHNSON &NELSON, 1979). The used material was adhesive ribbon, chair, rope, metric trena and medicine ball of three kilos. Being these described tests wide for scientific literature, they get one high degree of trustworthiness. After the accomplishment of the tests the group was submitted It the eight weeks of pliométricos training three times per week, while group B submitted it eight weeks of resistance training and force with the weight of the proper body, also three times per week. The training had occurred below as: Group ü Flexões of arm with strokes of palms - 4 x 10; ü Spider (displacement with the hand and feet from the seated position) - 4 x 2 minutes; ü Agachamento with jump (flexão of knees until 90º) - 4 x 20 repetitions; ü unilateral Agachamento with jump (flexão of knees until 90º) - 4 x 20 repetitions. The interval between the series was of one minute to one minute and thirty seconds. Group B ü Flexões of arm - 4 x 15; ü Flexões of arm between steps - 4 x 15; ü Agachamento (flexão of knees until 90º) - 4 x 25 repetitions; ü unilateral Agachamento (flexão of knees until 90º) - 4 x 25 repetitions. The interval between the series was of fifty seconds. Obs.: These training had been concomitant to the habitual training of sanshsou of the respective academy, where all the elements of this work train three times per week. Presentation and quarrel of the results The tests carried through before the training had demonstrated a average of muscular power of MMSS and MMII, being this average the following one: Group: I hurl of medicine ball = 3.81 mts horizontal Jump = 2,09 mts Group B: I hurl of medicine ball = 3,60 mts horizontal Jump = 1,95 mts These results drastically had been modified after the eight weeks of training in all the groups, having improvement in such a way of MMSS how much of MMII, still that in different ratios. In the tests after-training the two groups had in such a way demonstrated evolutions in the MMSS power how much of MMII, as below: Group: I hurl of medicine ball = 3,96 mts horizontal Jump = 2,22 mts Group B: I hurl of medicine ball = 3,85 mts horizontal Jump = 2,05 mts the study demonstrated that the group had It an evolution of 3,71% of the first test in relation to as for MMSS, while that for MMII this evolution was of 6,46%. On the other hand group B had an improvement of 6,78% for MMSS, being for MMII this improvement was of 5,14%. Comparing the results, group B had a 3,07% evolution greater that the group for MMSS, while the group had It a 1,32% improvement greater that group B in relation to the MMII. Conclusion The present study the improvement obtained for the group demonstrated an improvement in the muscular power of MMII in the group submitted to the superior pliométrico training that did not use this training. Soon the pliométrico training probably is advisable for the practitioners of sanshou that they desire to improve its muscular power of MMII. However, the same he was not evidenced for the MMSS, where the group that used exercises of resistance and force with the weight of the proper body had obtained a expressivo result. Of this form the study it suggests that this method of training more is indicated for the practitioners of still sanshou that they long for an improvement in the muscular power of MMSS, that new studies with bigger samples and preferivelmente with laboratory tests they must be carried through so that if has a bigger exactness about this subject.

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ABSTRACT

This research had as focus to analyze karate under the vision of the porting training being verified the effect of the pliometric training in this modality. The present study it had as objective to verify if the pliometric training would increase the power of members in the practitioners of karate. The sample is composed for a group of 12 intermediate practitioners of karate with age between 18 and 28 years in three academies in Rio De Janeiro. The individuals had been divided in two groups, with 6 elements each one, the group and group B. Had a feminine element in each one of the groups. The groups had been submitted the tests of muscular power. After the accomplishment of the test the group was submitted It the eight weeks of pliometrics training three times per week, while group B submitted it eight weeks of resistance training and force with the weight of the proper body, also three times per week. It was used adeseiva ribbon, chair, rope, metric trena and medicine ball of three kilos. Inquiry is concluded after an improvement in the muscle power of MMII in the group submitted to the superior pliometric training the improvement obtained for the group that did not use this training. Soon the pliometric training probably is advisable for the practitioners of snshou that they desire to improve its muscle power of MMII. However, the same he was not evidenced for the MMSS, where the group that used exercises of resistance and force with the weight of the proper body had obtained a expressivo result. Of this form the study it suggests that this method of training more is indicated for the practitioners of sanshou that they long for an improvement in the muscular power of MMSS.

WORD-KEY: Pliometric training, Karate, muscle Power.

RÉSUMÉ

Ceci je étudie tuvieve l'intensité d'étudier le karatê com l'atencón de l'entraînement sportif en vérifiant les efeitos de l'entraînement pliometrico EM cette modalité. La présente étude vérifie se l'entraînement pliometrico podria augmenter la puissance de de ce qui est membros dans ce qui est praticantes du karatê. L'échantillon a été composé d'un groupe de 12 intermédiaires praticantes du karatê avec âge entre les 18 et 28 années dans 3 académies dans l'état de Rio de Janeiro. Les sujets étaient séparés EM 2 groupes, le groupe A et le groupe B, les deux com 6 individus chaque. Tenia une fille dans chaque équipe. Les groupes essais de puissance musculaire. Après eux testez le groupe A il à 8 semaines d'entraînement 3 vezes pliometricos par semaine, tandis que le groupe B à 8 semaines d'entreinamientos résistance et de força com le poids du corps, aussi 3 vezes par semaine. Je suis utilisé uma fita adeseiva, chaise, corda, trena métrique et medicine ball de 3 quilos. La conclusion de l'étude est qu'il y a uma melhora EM la puissance musculaire de MMII EM le groupe mise à l'entreinamiento pliometrico plus grand qu'EM le groupe formé EM outro méthode. Ainsi, l'entraînement pliometrico est indiqué à ce qui est praticantes de karate.

MOTS-CLES: Entraînement pliométrico, Karatê, Puissance musculaire.

RESUMEN

Esto estúdio tuvieve la intensión de estudiar el karatê com la atencón del entrenamiento deportivo verificando los efeitos del entrenamiento pliometrico em esta modalidad. El presente estudio verifico se el entrenamiento pliometrico podria aumentar la potencia de los membros en los praticantes del karatê. La muestra se fue compuesta por un grupo de 12 praticantes intermediarios del karatê con edad entre los 18 y 28 años en 3 academias en el estado del Rio de Janeiro. Los sujetos fuerán separados em 2 grupos, el grupo A y el grupo B, los dos com 6 individuos cada. Tenia una muchacha en cada equipo. Los grupos fuerán submetidos testes de potencia muscular. Después de los teste el grupo A fue submetido a 8 semanas de entrenamiento pliometricos 3 vezes por semana, mientras el grupo B se fue submetido a 8 semanas de entreinamientos de resistencia e força com el peso del cuerpo, tambien 3 vezes por semana. Se utilizo uma fita adeseiva, silla, corda, trena metrica y medicine ball de 3 quilos. La conclusión del estúdio es que hay uma melhora em la potencia muscular de MMII em el grupo submetido al entreinamiento pliometrico mas grande que em el grupo entrenado em outro metodo. Así, el entrenamiento pliometrico es indicado a los praticantes de karate.

PALABRAS-CLAVE: Entrenamiento pliométrico, Karatê, Potencia muscular.

EFEITOS DO TREINAMENTO PLIOMÉTRICO EM PRATICANTES DE KARATÊ

RESUMO

Esta pesquisa teve como foco analisar o karatê sob a visão do treinamento desportivo verificando os efeitos do treinamento pliométrico nesta modalidade. O presente estudo teve como objetivo verificar se o treinamento pliométrico aumentaria a potência de membros nos praticantes de karatê. A amostra é composta por um grupo de 12 praticantes intermediários de karatê com idade entre 18 e 28 anos em três academias contidas no estado do Rio de Janeiro. Os indivíduos foram divididos em dois grupos, com 6 elementos cada um, o grupo A e grupo B. Havia um elemento feminino em cada um dos grupos. Os grupos foram submetidos a testes de potência muscular. Após a realização dos teste o grupo A foi submetido a oito semanas de treinamentos pliométricos três vezes por semana, enquanto o grupo B submeteu-se a oito semanas de treinamentos de resistência e força com o peso do próprio corpo, também três vezes por semana. Foi utilizado fita adeseiva, cadeira, corda, trena métrica e medicine ball de três quilos. Conclui-se após investigação uma melhora na potência muscular de MMII no grupo submetido ao treinamento pliométrico superior a melhora conseguida pelo grupo que não utilizou este treinamento. Logo o treinamento pliométrico provavelmente é aconselhável para os praticantes de snshou que desejam melhorar sua potência muscular de MMII. Porém, o mesmo não ficou evidenciado para os MMSS, onde o grupo que utilizou exercícios de resistência e força com o peso do próprio corpo conseguiram um resultado mais expressivo. Desta forma o estudo sugere que este método de treinamento seja mais indicado para os praticantes de sanshou que almejam uma melhora na potência muscular de MMSS.

PALAVRAS-CHAVE: Treinamento pliométrico, Karatê, Potência muscular.