153 - DISCUSSING THE CONCEPTS OF BIOMECÂNICA IN THE GRADUATION: THE ADEQUATE USE OF THE SPORTING FOOTWEAR

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1. INTRODUCTION

The biomechanics is a science multidisciplinary that acts in several areas of knowledge, in the which the researchers are concerned in study and examine the forces that act inside a biological structure and the effects produced by those forces, in this way investigate as much as, human movement the use of sporting implements, prosthesises and equipment of security (ATWATER, 1980; BAUER, 1999; NIGG & HERZOG, 1994).

The utilization of these knowledge by the teacher of Physical Education (EF), is fundamental for a qualitative evaluation of the movement, enabling analyze the articulations involved, the amplitude of movement and the motor actions that are carried out in each phase of determined movement. This kind of evaluation becomes essential in any physical activity, for the maintenance of the health, when is going to be verified the postures that do not compromise the muscle-skeletal system and the identification of techniques more hurried for a better sporting performance (McGINNIS, 2002).

The sporting footwear is an implement developed specifically for the achievement of physical exercises, in which the knowledge about the mechanical one of the goes and about the structures of the lower member are fundamental for the manufacture of adequate footwear. The foot and the ankle form a system proprioceptive and exteroceptive, which, FREITAS et al. (2007), affirms that this system receive of the muscles and articulations multiple information, for provide stability and sufficient sensibility for absorb the impacts of the corporal weight during the different activities. VILADOT (1989), affirms that the foot is the essential support for the human bipedal position and fundamental piece for the goes, which during the physical activity, exercise physical or practical sporting, receives the overload generated by the movement of the corporal batter. In this way WINTER (1991), affirms that for the making of a sporting footwear is important the knowledge about the magnitude of the force of reaction of soil, therefore how much bigger this forces bigger the overload in the motor device. Corroborating with this assertion, SERRAO (2002), affirms that the performance of an athlete or the health of be a human, can be verified through the determination of the imposed mechanical stress in activities in the position of foot, resulting in the worry of the choice of an adequate footwear for the practical sporting one.

In the present literature, is able to be perceived the importance and to even the worry regarding the knowledge about the adequate use of sporting footwear, to the kind of soil, to the sport practiced and also about the utilization of footwear falsified (AZEVEDO et al., 2007). The variation of the kinds of footwear consists of adapt that implement to the physical exercise that will be carried out. On the basis of the interaction footwear, is able to be optimized the answers of the footwear in the dynamic modifications of the movement, in agreement relates KNACKFUSS (1993), where the foot is a complex segment of the motor device, that presents a private capacity in bear, deaden and distribute the force weight of the individual in diverse situations in that is requested functional.

The analysis of the human movement, under the point of view of the Biomechanics, involves the knowledge of the exact sciences. In this way, CORRÊA & FREIRE (2004), relate that to Biomechanics is a discipline that should be understood by technicians that deal with the sport of high performance or by professionals that have deep knowledge of physics, specifically to Mechanical and to Mathematical. FREITAS & LOBO DA COSTA (2000), also affirm that those concepts unfortunately penetrated the academic environment of the EF and, by his own idea limited, move away big number of professionals of the straightest contact with the discipline.

The consequences of the difficulty of the education of the Biomechanics in the courses of EF can be shown up us diverse sectors of action of the professor, as example, the bad use of determined sporting footwear during the classes of school Physical Education, in trainings of amateur teams and to even inside to own institution. Unfortunately this reality portray the knowledge acquired by the students of EF during its academic formation. DEPRÁ & BRENZIKOFER (1997), relate about the educational stamp literature scarcity developed for the education of the Biomechanics so much in level of graduation how much of postgraduation. Another example relates MELO (1996), can be verified regarding the Brazilian consumer, that is little demanding and little sensible upon choosing a sporting footwear, showing up like this, the absence of information or knowledge, becoming urgent the definition of parameters that integrate the norms of quality control and the output and disclosure of that informative stuff for better orientation of the consumer.

Therefore the objective of this researches consisted of verify the knowledge of the graduating students in the course of Physical Education of the Federal University of Pelotas - ESEF/UFPEL about the adequate use of the sporting footwear for the main sports of block: handball, futsal, volleyball and basketball.

2. METHODS

The sample was composed for 34 students of EF, chosen randomly, of different semesters of the Federal University of Pelotas, 19 men and 15 women, with ages varying between 20 and 25 years. It was utilized, as instrument of measure, a questionnaire for the achievement of the interviews. The questionnaire was constituted by questions related to the systems of protection and deaden originating from the specific sporting footwear for each one of the sporting modalities, Handball, Futsal, Basketball and Volleyball, and also itself received some kind of teacher's orientation, related to this thematic. The facts were grouped utilizing a descriptive statistics, for verify the incidence of them replaced.

3. RESULTS

The Table 1 shows the results obtained in the interview, regarding the systems of protection for the different sporting modalities and the teacher's orientation about the matter.

Table 1: Answers related to the systems of protection or deaden in the sporting footwear, height of the pipe of the footwear and teacher's orientation, values in percentage about N = 34.

	Handball	Futsal	Basketball	Volleyball
Systems in the footwear (%)				
Deaden	6	-	10	25
Adhesion	9	75	0	3
Prevention sprains	12	-	0	-
Deaden e Adhesion	47	13	35	39
Prevention sprains e deaden	26	12	55	33
Height of the pipe (%)				
High pipe	-	-	71	5
Medium pipe	75	12	26	91
Short pipe	25	88	3	4
Orientation of the teacher (%)				
Yes			12	
No			88	

The Table 1 shows that the biggest percentages in the answers indicate the choice of the students for the purchase or for the recommendation of sporting footwear for the practical one of the sporting modality. For the practical one of handball 47 (%) of him interviewed believe that for the footwear needs deaden and adhesion, in compensation, for the futsal 75 (%) of the sample referred to the adhesion as factor of choice of the footwear. Regarding the Basketball 55 (%) of the educators consider indispensable the systems of prevention sprain and deaden, already for the volleyball 39 (%) of the students believe that is important present the systems of deaden and adhesion to the footwear. As regards the questioning about the approach of the teacher about this matter, 88 (%) of the students related that received no kind of orientation in the disciplines that are studying, in the course of EF.

4. DISCUSSION

Researches as the of SERRAO; ALONE & AMADIO (2000), and PICON et al. (2002), they seek relations between the influence of the utilization of footwear for the improvement and optimization of sporting practices. The capacity of absorb shock has been aimed as one of the most important functions of the sporting footwear (DREZ 1980, NIGG & SEGESSER, 1992). And the main motives of degenerative wounds that affect the motor system are the amount of these impacts (WINTER & BISHOP, 1992).

The force of vertical reaction of soil in the walk, second MESIER (1994), is around 120% of the total corporal batter, in the phase of support and in the phase of impulsion, being necessary an appropriate footwear for deaden the impact. HALL (2005), relates that an impact involves the collision of two bodies by a break of extremely small time, during which two bodies exercise relatively big forces, an about another. In the phase of landing of a jump, second COLEMAN, BENHAM & NORTHCOTT (1993), the sportsman should check soil in the tip of the foot and afterwards perform a dorsal-inflection, knee and hip inflection, the impact will be better absorbed, due to the most time of absorption of the impact, dissipating like this the force of reaction of soil. In this way an adequate footwear associated with a great technical the jump, could minimize the impact generated by the force of reaction of him soil.

In the volleyball is extremely important a flat one that offer high index of adhesion for help in the impulsion vertical of the player, jointly with a system of deaden, due to the big number of jumps performed in a party. BARBANTI (1986), affirms that of 50 to 60 (%) of the motor actions in the games of volleyball are constituted by the jumps.

For the basketball is necessary a footwear with a great system of absorption impact, because the successive ball possession disputes in suspension, in assembly with a system of prevention sprain of the ankle in function of the big number of abrupt stops and changes of direction. Second SACCO et al. (2006), the region of the body more injured, between the players of basketball, is the ankle, in which 45.9 (%) of the individuals injured in this region, stop to training at least a week.

In the sports that involve jumps, SILVESTRE (2003), relates that the wounds in the ankle is about of 15 to 45 (%) between all of the kinds of wounds and correspond the reason to stop training for 25% these athletes. HAMILL & KNUTZEN (1999), affirm that the force of reaction of him soil increase considerably in the sports that involves the jumps, being able to arrive 10 times or more the corporal weight.

In case of the handball, the footwear should offer a system of deaden that softens the fall of the players in the throwing in suspension, ally to a system of efficient enough adhesion, which permit to the player, facility in the movement and breaking. RESNICK & HALLIDAY (1981), defined the friction as a force that acts in the interface of the surfaces in contact in the opposite direction to that of the present or imminent movement, the magnitude of the force of friction generated, decides to facility or relative difficulty of the movement for two objects in contact. Already for the futsal due to not utilization of jumps in big scale, the adequate footwear for this sport is not going to excel for the deaden but the adhesion. The mechanical shipment, in the futsal, the lower members is elevated, where the friction becomes essential for the motor gesture according to SERRÃO; AMADIO & ALONE (1999), in this sport the feet are utilized not only for the locomotion, but also for fix the actions of game.

In what refers to the criteria of choice of the footwear, the population in general, does not utilize like criterion the absorption of impact and stability that the footwear provides to the articulation of the ankle NIGG (1986). The choice based itself in criteria less prominent in what refers to the protection, as the price, the durability and the comfort. The factors to be taken into account at the right moment of acquire a footwear should be the system of deaden, the impact distribution power, the format of the foot, the corporal weight, the physical exercise that will be carried out with the footwear and the floor where the exercise will be carried out. MANFIO & ÁVILA (1997), alert about the influences in profile differentiated inside a same numbering, in the quality of the footwear, therefore for a same break of length exists a variation in the measures of perimeters.

Therefore a sporting footwear should offer a system of protection against the main active forces in this system, absorption of impact for the force of reaction of soil, flat with a determined coefficient of friction for different exercises in the and a format that permit the variation in the volume of the foot, seen that, the extremity of the lower members suffers big variation to the long one Imposed.

5. CONCLUSIONS

The vast field of action, the technological advancements and to recent regulation of the profession, require of the professor of EF a broad knowledge. In this way, the teacher, during the orientation of any physical activity or physical exercise, should how to know integrate his theoretical knowledge with the practical manifestations of his students. However during the graduation exists a difficulty in the education, of disciplines about the analyzes of the human movement, perhaps because the concepts of Physics and Mathematical or by the basic education methodologies absence of disciplines as Biomechanics and Kinesiology. Therefore one of the challenges of the researchers, at present, is going to develop scientific contents of pedagogical stamp, for that can serve of educational stuff, facilitating the trial teach-learning. This approach between the science and the education is not alone, fundamental for the academic formation of the future professor of EF, as is also a new area of research and action of the Sciences of the Human Movement.

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DISCUSSING THE CONCEPTS OF BIOMECÂNICA IN THE GRADUATION: THE ADEQUATE USE OF THE SPORTING FOOTWEAR

ABSTRACT

Detaches-itself in this researches the importance of the Biomechanics in the academic formation of the teachers of Physical Education. The analysis of the human movement, involves the knowledge of the exact sciences, specifically to Mechanical, branch of the Physical one and to Mathematical, however a big difficulty exists for the education of the Biomechanics in the graduation. The objective of this researches, was verify the knowledge of the graduating students about the adequate use of the sporting footwear for the main sports of block, handball, futsal, volleyball and basketball. The sample was composed for 34 students of Physical Education, of different semesters of the Federal University of Pelotas, 19 men and 15 women, with ages varying between 20 and 25 years. It was utilized, as instrument of measure, a questionnaire for the achievement of the interviews. The questionnaire was constituted by questions related to the systems of protection and deaden originating from the specific sporting footwear for each one of these sporting modalities, also were questioned itself received some kind of orientation of the professors, related to this thematic. The facts were grouped utilizing a descriptive statistics, for verify the incidence of them replaced. With base in the results found is able to conclude that new approaches of educational stamp should be elaborate for facilitate the education of the Biomechanics.

KEYWORDS: Biomechanics, academic formation, sporting footwear

UNE DISCUTION À PROPOS DES CONCEPTS DE BIOMÉCANIQUE AU SECONDE CICLE: L'USAGE CONVENABLE DE LA CHAUSSURE DE SPORT

RESUME

On souligne dans cette recherche l'importance de la Biomécanique dans la formation académique des professeurs d'Éducation Physique et Sportive. L'analyse du mouvement humain implique la connaissance des sciences exactes, plus précisément la Mécanique, une branche de la Physique, et les Mathématiques. Toutefois il y a une grande difficulté dans l'enseignement de la biomécanique au seconde cicle. De cette manière, le but de cette recherche a été celui de vérifier la connaissance des étudiants à propos de l'usage convenable de la chaussure de sport pour les principales activités de terrain de sport, footsal, volley-ball et basketball. Le panel a été composé par 34 étudiants d'Éducation Physique et Sportive de différents semestres de l'Université Fédérale de Pelotas, 19 hommes et 15 femmes âgés entre 20 à 25 ans. On a utilisé comme instrument de mésure un questionnaire pour réaliser les interviews. Le questionnaire a été construit par des questions en rapport avec les

systèmes de protection et amortissement qui proviennent de la chaussure spécifique pour chacune de ces modalités sportives. On a aussi demandé aux interviewés s'ils on reçu quelque type d'orientation des professeurs en ce qui concerne à cette thématique. Les données ont été rassemblées en utilisant une statistique descriptive pour vérifier l'incidence de réponses. A partir des résultats trouvés on peut conclure que des nouvelles méthodes de caractère didactique doivent être élaborées pour faciliter l'enseignement de la Biomécanique.

MOTS-CLE: Biomécanique, formation académique, chaussure de sport

DEBATIENDO LOS CONCEPTOS DE BIOMECÁNICA EN LA GRADUACIÓN: EL USO ADECUADO DEL CALZADO DEPORTIVO

RESUMEN

En esta investigación destacase la importancia de la Biomecánica en la formación académica de los maestros de Educación Física. La análisis del movimiento humano, arrolla lo conocimiento de las ciencias exactas, específicamente la Mecánica, subdivisión de la Física y de la Matemática, mientras tanto existe una dificultad muy grande para lo enseño de la Biodinámica en la graduación. El objetivo del estudio fue examinar lo conocimiento de los alumnos de la graduación sobre el uso adecuado del calzado deportivo para los principales deportes del cuadra; balonmano, fustal, balonvolea y baloncesto. La muestra fue compuesta por 33 alumnos de Educación Física de distintos semestres de la Universidad Federal del Pelotas, 19 hombres y 15 mujeres, en edad entre 20 y 25 años. Para realización de las entrevistas, como instrumento de medida, fue utilizado, un cuestionario. Lo cuestionario fue compuesto por preguntas relacionadas a el sistema de protección y amortiguamiento proveniente del calzado deportivo correcto para cada un de estos deportes, también fueran cuestionados se ellos tuvieran algún tipo de orientación sobre esto, del maestros. Las contestaciones fueran reunidas utilizando estadística descriptiva, para comprobar la incidencia de las réplicas. Después de la análisis de los resultados concluidse que nuevos métodos didácticos deben ser elaborados para facultar lo enseño de la Biomecánica.

PALABRAS-LLAVE: Biomecánica, Formación Académica, Calzado Deportivo

DISCUTINDO OS CONCEITOS DE BIOMECÂNICA NA GRADUAÇÃO: O USO ADEQUADO DO CALÇADO ESPORTIVO

RESUMO

Destaca-se nesta pesquisa a importância da Biomecânica na formação acadêmica dos professores de Educação Física. A análise do movimento humano, envolve o conhecimento das ciências exatas, especificamente a Mecânica, ramo da Física e a Matemática, entretanto existe uma grande dificuldade para o ensino da Biomecânica na graduação. Desta forma o objetivo desta pesquisa, foi verificar o conhecimento dos graduandos sobre o uso adequado do calçado esportivo para os principais desportos de quadra, handebol, futsal, voleibol e basquetebol. A amostra foi composta por 34 estudantes de Educação Física, de diferentes semestres da Universidade Federal de Pelotas, 19 homens e 15 mulheres, com idades variando entre 20 e 25 anos. Foi utilizado, como instrumento de medida, um questionário para a realização das entrevistas. O questionário foi constituído por perguntas relacionadas aos sistemas de proteção e amortecimento provenientes do calçado esportivo específico para cada uma destas modalidades esportivas, também foram questionados se receberam algum tipo de orientação dos professores, relacionado a esta temática. Os dados foram agrupados utilizando uma estatística descritiva, para verificar a incidência das repostas. Com base nos resultados encontrados pode-se concluir que novos métodos de cunho didático devem ser elaborados para facilitar o ensino da Biomecânica.

PALAVRAS CHAVE: Biomecânica, formação acadêmica, calçado esportivo.