CONCLUSIONS

During the training process, it is of use to operate with a unitary system of objective indices able to assess the training level, represented by a motion analysis program. The use of supporting devices is an effective way to train and assess players, able to complete the present methodology in high performance volleyball.

Using the video recordings, the main technical errors were identified; more importantly, the causes leading to the error occurrence were extrapolated.

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ÉTUDE SUR L'IDENTIFICATION DES ERREURS DE TECHNIQUE EN VOLLEYBALL — LA PASSE A DEUX MAINS DE DESOUS, EN UTILISANT L'ANALYSE VIDEO

Résumé

L'article fait partie d'un projet plus ample ayant comme objectif l'identification des erreurs de technique par l'analyse vidéo.

Dans l'appréhension initiale d'un procédé technique, la formation de la représentation psycho-motrique est accompagnée de déviations importantes dans la biomécanique des actions. Cet aspect fait l'objet de la recherche présente tout comme des efforts de nombreux experts dans ce domaine, qui essaient à prévenir et éliminer les erreurs qui causent des préjudices, par la dénaturation de la forme et du contenu de l'acte motrique.

***Mots clés** : technique, volleyball, analyse vidéo, erreurs, évaluation*

STUDY ON IDENTIFICATION OF FUNCTIONAL FEATURES UNDERLYING TRAINING IN MARTIAL ARTS

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Abstract:

The purpose of the study is to identify functional features of martial arts artists and their influence on training. The goal is to adapt the body to prepare competitive effort resulting in morpho-functional improvement, increased body potential and capacity to resist external factors.

Basic guidelines for preparing children to be sports practice orientated by designing programs tailored for 6-8 year olders; programs whose practical effect to achieve the objectives set for this level of training, according to theoretical data and methodological literature provided.

This age group (6-8 years) is optimal for the development of certain components of driving ability: mobility, speed, strength, coordination capabilities (rythm, balance, spatial and temporal orientation).

***Keywords**: functional features, training, kids, martial arts*

INTRODUCTION

The study was structured in the following sections: material-method (approach that sets the premises in the study), results (analysis) and discussions (presents the final conclusions of the study).

The sports training effort means physical and psychical screening, transmission and processing of information to determine a certain degree of solicitation of body involving the muscle and energy system, amending the homeostazic and starting at a higher level.

Modeling is the method by which phenomena are studied using models, reproducing the original system model. Through design, knowledge of reality is done with the object or process that shapes it.

By studying the model, we collect data, formulate hypotheses and assumptions about the

object, phenomenon or process modeling. Based on the model created to study the phenomenon or activity, trying to find optimal solutions to achieve it.

In the educational process have developed various models on modeling method is used. Through models students are helped to notice and discover some properties, and the relationship information about the phenomena and processes in sports training that these models reproduce. In this way teaching model condenses a series of information that athletes are going to discover.

Teaching models are considered similar models of reality, in teaching technology, the model representing the maximum requirements that may be made in the educational process.

In the field of sports training, the model projected maximum requirements to be met. Can develop models for internal training models for children and youth, and other categories of athletes. Developing models of particular importance in the objectification and optimization of preparation.

The cyclicity of the competitions requires establishing these core values for a certain period and determines the success of competitors. Change usually occurs slowly and not always evenly causing all typical values at a time. This change occurs because of competition rules, but often due to the evolution of the concept of selection and training, which is in close correlation and interdependence.

The effort in training in martial arts means the wining aware of the process requests from training or sports contest for improving preparedness (physical, technical, tactics, psychic) which produces changes in the capacity and performance systems functional adaptation involved. Adaptation requires stimuli able to produce a response from the body.

The purpose training consists in adapting the organism to effort where the effect improving morpho - economy, increasing potential body and the ability to withstand external stimulus.

The characteristic feature of sport and competition that is all that means, record, performance, title, today is found increasingly more in practice more and more martial arts. Moreover, we can say that in recent years, more and more martial arts were "sportivized" the desire to enter the market, to be known, to capture attention. At first they were a cult of the body and spirit, never being considered separately. A victory of the body must necessarily be one of the spirit and viceverssa.

Lately, however, came what are called martial arts sporting events as a show. Highly publicized, these competitions have meaning only as a means of fight verifying. They distort the true picture of martial arts fight. To make a goal of these fights, contests and performances is not by far the goal of a true fighter.

Obtaining special techniques to impress your friends, or public, again may alter the real purpose of martial arts.

In Vovinam Viet Vo Dao, the first international contests were organized in recent times, i.e. of the third stage (International touring in 2000, World Championships in 2003 and European championships in 2004).

MATERIAL METHOD

The aim of the study is to identify the functional particularities of martial arts practitioners and their infuence on the training process.

Effort in martial arts is a conative behavior of the athlete to mobilize resources in physical and mental training and competition. It involves physical effort of all body systems to achieve adaptation, namely the development of motor skills, mental, physiological and high biochemical levels.

Martial arts exercise occurs at a time when specific techniques are performed.

The variety of effort presents specific characteristics, which have to be known to know the limiting or stimulating effects on the martial arts practitioners' body (Hantău, 1996; Chau-Phan, 1999; Frazzei, 1999; Iordache, 1999; Avalone, 2000; Cişmaş, Ozarevici, 2001; Tran Van Ba., 2002a; Levet, 2006).

- *Sports effort* involves uniform and monotonous daily requests; to obtain performance in martial arts sports, and needs to be very intensive for the purpose of adapting the upper body to training requirements.
- *Static, dynamic and combined efforts* occur according to the nature of the muscle contractions: static (isometric) creating tensions in the muscle, without changing its length (battle positions, blocking, forcing the joints, bottlenecks, immobilisation); dynamic (isotonic) - characterized by skeletal muscle length changes (lengthening, shortening) and their projection in the martial arts are given the dodge, travel specific design, falls, blows; combined efforts (isokinetic) - are those that meet the static and dynamic moments: punch attack, block, dodge and counter with kicks, blocking.
- *Cyclic and acyclic efforts*. Cyclical movements in martial arts are performed with fists hit series such as direct blows left, right, range of kicks executed with the same foot at the same level, phase sequence or repetition of the same techniques in unit time. Acyclic effort is what characterizes the most prominent martial arts fight in the sense of execution in the constant exchange of attack techniques, defense and counterattack according to actual combat situation.
- *Continuous and discontinuous efforts* - discontinous efforts are discontinuous interruptions that may occur or breaks, which allow the body to

recover partially; this type of effort is most common in martial arts.

- *Single and repeated efforts* – in martial arts repeated efforts prevail, because winning the competitions requires lots of encounters, each one needing new trainings (activations) in the breaks between the rounds or matches.
- *Training efforts and competitive efforts*. The two types of exercise differ through the physical and mental education in the competition due to mobilization and motivation.
- *Nonspecific and specific efforts.* Non-specific efforts are used, especially in motor skills development by means of other sports. If specific efforts, these include means for physical training, technical and tactical style practiced in the area.
- *Neuromuscular, cardiorespiratory and energetic efforts*. Knowing the typology for this classification is useful for determining the optimal proportions for orientation training practiced sports industry with a solid scientific basis, using the most effective ways and means. The martial arts are prevalent neuromuscular effort and energy, nervous system and are required by competitive fight analyzers and energy mechanisms are required at maximum power for quick.
- *Aerobic, anaerobic and mixed efforts* (alactacide and lactacide). The classification is based on divisions depending on how efforts to provide energy (ATP, CP, glycogen) to support the effort in the presence or absence of oxygen. Most styles present during the fight between 4 and 9 minutes, ie at the limit between anaeribic latacid and mixed phase. There are situations when the fight ends after a few seconds (alactacid anaerobic effort) because obtaining victory following a well-placed kicks or design.

The correlation between the heart rate and the duration of the application in relation to energy sources are the following (Dragnea, 1996), Table 1:

Table 1. Correlation between heart rate and duration of application in relation to energy sources

Energetic source	Heart rate	Duration of application
Aerobic	120-150 bpm	Over 5 minutes
Mixed	160-190 bpm	2-5 minutes
Anaerobic - lactacid	180-190 bpm	21-120 seconds
Anaerobic - alactacid	170-190 bpm	1-20 seconds

The heart rate can be considered an objective criterion for assessing the types of effort (Table 2).

Table 2. Assessing the type of effort depending on the heart rate (after Dragnea, 1996)

Heart rate	Aerobic-anaerobic exercise percentage	
under 120 bpm	100% aerobic	
120-150 bpm	90-95% aerobic	5-10% anaerobic
150-165 bpm	65-85% aerobic	15-35% anaerobic
165-180 bpm	50-65% aerobic	35-50% anaerobic
over 180 bpm	Over 50% anaerobic	

Severe, heavy and light efforts. Depending on the intensity of the exercise, there are severe efforts (the heart rate goes to 160 beats per minute, lasting up to 1 minute), hard efforts (heart rate 140-160 beats per minute and lasting up to one hour), and light efforts (heart rate below 120 beats per minute, lasting up to several hours).

In various martial styles meet all these types of intensities of effort because of the complex.

In the noncontact and semicontact styles, the intensity of the exercise is lower, .i.e. the category of hard efforts (intense and optimal), but not exhaustive or maximal intensities are excluded at certain moments of the struggle.

The efforts in the sever type group meet in full contact rounds from full contact styles. Breaks between rounds are 1 minute, during which athletes recover partially.

In martial arts the dominant energy sistem is that which uses 90% of the energy provided by ATP and CP with lactate acumulation and 10% based on oxygen (Chirazi, 1999; Chau-Phan, 2002; Dragnea, Teodorescu, 2002; Constantin, Mihai, 2003).

Effort from the sports training results in the appearance of adaptation, wich is of three types: immediateadaptation, permanent and cumulative.

Immediate adaptation is represented by biochemical and functional changes that are set during the execution of an exercise (act or action driven) and after its restoration during the offset occurs when oxygen deficiency.

Permanent adaptation is based on persistent changes that will occur in the subsequent rehabilitation process. They are based on load changes and growth of the hormonal activity ruring the time the task acts systematic on the body.

Adaptation of biochemical and morpho-functional changes include cumulative occurring after a long workout.

Long-term adaptation is determined by volume and high intensity exercise that results in hyperactivity organs and systems involved (increased muscle mass, the volume of the heart, oxygen consumption).

Long-term adaptation is achieved in three stages: the systematic mobilization of resources through the process of the body functional training, increasing intensive efforts to determine the structural and functional changes in organs and tissues (hypertrophy), achieving stable adaptation, due to insufficient energy reserves necessary to carry motor activities (Demeter, 1981, 1982).

DISCUSSION

Every sport must establish models that are oriented according to the preparation and participation in competitive sports. In this regard, the essential are training patterns (training), contest, champion. Primary is the champion model, because its characteristics are established basic aspects of the competition model, that of training.

Establishing the champion model is complex because it includes somatic, functional motor skills, technical, mental data.

Each of these components must be given attention to determine the specific characteristics which will ultimately contribute to shaping the model champion.

In martial arts, as in the other sports, these models are developed for senior athletes, and then, depending on the features and characteristics by older models can be made at the junior and children.

Data from the literature does not reveal sufficient information for the senior model champion Vovinam Viet Vo Dao style. It is necessary to establish in detail all the components, based on the study of other styles in the literature and research are at an advanced level.

The Vovinam Viet Vo Dao style is representative of the Vietnamese martial arts school that uses the principles of the Vietnamese fight, of strength and suppleness with those of judo (Chau, Phan, 1999; Avalon, 2000; Tran Van Ba, 2002b; Levet, 2006).

THE SOMATIC MODEL

The Vovinam Viet Vo Dao competition has three classes as follows:

1. ***CHILDREN***: young children (7-10 years) and older children (10-14 years) with the following weight categories:

- young children (girls and boys): no fighting competitions are organized for this category, only technical;
- older children - boys: 40kg, 45kg, 50kg, 55kg, 60kg;
- older children - girls: 40kg, 45kg, 50kg;

2. ***JUNIOR***: junior small (14-16 years) and older juniors (16-18 years) with the following weight categories:

- junior small - boys: 45kg, 50kg, 55kg, 60kg, 65kg;
- junior small - girls: 45kg, 50kg, 55kg;
- junior high - boys: 50kg, 55kg, 60kg, 65kg, 70kg;
- junior high - girls: 50kg, 55kg, 60kg.

3. ***SENIOR***, with the following weight categories:

- Seniors - boys: 60kg, 65kg, 70kg, 75kg, 80kg, 85kg, 90kg;
- seniors - girls: 50kg, 55kg, 60kg.

In terms of somatic, the Vovinam Viet Vo Dao practitioner must fit the following pattern:

- relationship between size and scale to be close to the value 1;
- waist report - 100 / weight is recommended to be below 1.

The definition of the somatic model is only based on these parameters because there are weight categories that make it difficult to establish a unified model valid for all athletes because the difference in weight at males can be over 30 kg.

THE FUNCTIONAL MODEL

The typology of motor activity in the martial arts requires that the dominant energy system is one that uses 90% of the energy supplied by ATP and CP in accumulation of lactate (anaerobic lactacid) and one based on 10% oxygen - aerobic (Chirazi, 1999; Phan Chau, 2002; Dragnea, Teodorescu, 2002; Constantin, Michael, 2003).

In martial arts are dominant neuromuscular effort and energy, nervous system and the analyzers are required by competitive fight and mechanisms are required at maximum power for quick energy.

THE MOTRICAL MODEL

- specific power under speed
- speed in resistance regime
- joint mobility for the implementation of specific techniques
- coordination capacity needed for a better positioning in combat with the enemy in the effective application of techniques
- specific resistance

Establishing the technical model is a difficult task due to the complexity of the technical component. For high-performance, the technical model has the following structure:

- knowledge and practical application of the 10 positions (TAN);
- blockages using (GAT) by combat situations;
- knowledge of techniques of punches (LOI DAM), elbow (CHO), feet (LOT DA);

- application in combat techniques of self defense (Khoa GO TU VE), defense against punches (PHA DON TAY), defense against kicks (Phan Don Chan), defense against knife (DAO GAM);
- knowledge of the offensive techniques by foot (DON CHAN TAN CONG) to counter enemy actions;
- the right times to use techniques from category key arm (KHOA TAI DAT);
- using the techniques of attack and defense weapons (knife, sword);
- knowledge of Vietnamese fighting technique (VAT), fight coded (SONG LUYEN) and imaginary forms of fighting (QUYEN).

Progression in terms of Vovinam Viet Vo Dao knowledge technique is well illustrated by the exam grade, where you know certain technical elements of style. From the initial stage till the achievement of the black belt, the student must master very well this martial arts technique.

CONCLUSIONS

Basic guidelines for preparing children to be sports practice orientated by designing programs tailored for 6-8 year olders; programs whose practical effect to achieve the objectives set for this level of training, according to theoretical data and methodological literature provided.

For references are non-existent practices, experts in the field making only recommendations on training young athletes methodically.

This age group (6-8 years) is optimal for the development of certain components of driving ability: mobility, speed, strength, coordination capabilities (rhythm, balance, spatial and temporal orientation).

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ÉTUDE SUR L'IDENTIFICATION DES CARACTERISTIQUES FONCTIONNELLES QUI SOUS-TENDENT LA FORMATION DANS LES ARTS MARTIAUX

Résumé:
Le but de cette étude est d'identifier les caractéristiques fonctionnelles d'artistes des arts martiaux et leur influence sur la préparation. L'objectif est d'adapter le corps à se préparer effort concurrentiel résultant de morpho-fonctionnelle d'amélioration, une augmentation du potentiel du corps et sa capacité à résister aux facteurs externes.
Lignes directrices de base de la préparation des enfants pour être pratique sportive orientée par la conception de programmes adaptés à l'âge 6-8 ans, les programmes dont les effets pratiques pour atteindre les objectifs fixés pour ce niveau de formation, selon les données théoriques et méthodologiques de la littérature.
Ce groupe d'âge (6-8 ans) est optimal pour le développement de certaines composantes de l'aptitude à conduire: la mobilité, la vitesse, force, les capacités de coordination (rythme, l'équilibre, l'orientation spatiale et temporelle).
Mots clés: *caractéristiques fonctionnelles, la formation, les enfants, les arts martiaux*