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STUDY CONCERNING THE IMPORTANCE OF LEUCOCYTES AND OF THE HEART RHYTHM IN DETERMINING OVERTRAINING

Univ. Prof. Dr. Radu Ababei

Univ. Prof. Dr. Cătălina Ababei

"Vasile Alecsandri" University of Bacău

Abstract

Pathophysiology of overtraining can include muscle pain and weakness, hormonal and haematological changes or mood, depression and nutrition problems such as loss of appetite and diarrhea. Athletes suffering from the overtraining syndrome are often immunosuppressive being, the most common signs of immune deficiency chronic and acute stress.

Keywords: effort, overtraining, leucocytes

Obvious fatigue leads to the decrease of the effort capacity and the refuse to continue the activity according to the schedule. During this stage, the fatigue is complex and it can not be surpassed in a short period of time. We can also call it lesson system fatigue, because the diminished efficiency as well as the decrease of the performance capacity are the result of a whole exercise program focusing on one direction, inhibiting protective phenomena developing within the cells of the nervous system, phenomena which lead to the discontinuance of the effort.

To these normal phases of the fatigue, deeper and deeper stages are gradually added, stages which, as the time passes, are accumulated without any chance of being compensated by means of the resting processes. This stage is defined as overtraining.

The consequences of overtraining vary from the alteration of the muscular function to the motivation. The physiopathology of overtraining can include muscular pain and weakness, hormonal and hematological changes, mood changes, depression and nutritional problems such as the loss of appetite and diarrhea (Eichner, 1994).

The number of symptoms which have been reported in the case of over trained athletes is large; Fry and Colab (1991) listed over 200 such symptoms.

The most frequent physiological and psychological changes associated to overtraining are (Gleeson, M., 2002):

- Weak performance;
- Muscular fatigue;
- Chronic fatigue;
- Inflamed muscles;
- Excessive perception of effort during work;
- Reduced motivation;
- Discontinuous sleep;
- Tachycardia during the night and in the morning;
- Altered mood;

- Loss of appetite;
- Gastrointestinal disturbances;
- Periodical infections.

In some people, the causes can be persistent viral infections similar to a glandular fever or a type of post-viral fatigue syndrome.

A significant decrease in the number of leucocytes indicates a chronic viral infection, and a low number of leucocytes often appear in the case of athletes engaged in heavy training (Mackinnon, 1998).

The athletes who suffer from the overtraining syndrome are often immunodepressive, the most frequent signs of the deficiency on the level of the immune system being the chronic and acute stress. Therefore, some of these signs as well as other biochemical changes can be often associated with the heavy training and have been suggested as possible factors in preventing overtraining.

Possible biochemical and immunological factors which prevent overtraining (Gleeson, M., 2002):

- The reaction of leucocytes to antigens
- Immunoglobulin A
- The leucocytes /neutrophile ratio
- The T-cell Ca 4+/Ca 8+ ratio
- The T-cell Ca 4+Ca 45RI+ expression
- The level of cortisone in the plasma or the cortisone /testosterone ratio
- Urinary steroids or catecholamine
- Glutamine in the plasma
- Urea in the plasma
- Cytokines in the plasma(e.g.:IL-6).
- The reaction of the lactate in blood to high intensity exercise
- The reaction of the plasma or the cortisone in the saliva to the high intensity exercise

In other words, this sensitivity of the immune system to the changes appearing during the training and other types of stress provide a great means of

assessing the ability of an athlete of dealing with intense training.

A major objective of the research performed on international level was to try and identify the factors of the immune system in the case of athletes.

These factors, together with the performance testing, a training log and perceiving the reactions (muscular pain, fatigue), monitoring the heartbeat during the sleep and the psychological profile can provide a warning in the case of overtraining.

Some researchers believe that the best model symptom of overtraining is reflected in the way the athletes feel the depression, the tension, the anger, the fatigue and the confusion (Morgan and Colab 1987).

These mood changes can show biochemical and immunological changes which are communicated to the brains by means of hormones and cytokines. The negative reactions reduce the sympathetic channel and decrease the number of receptors on the level of the pituitary gland for the release of the factors influencing the hypothalamus and/or the inhibition of the hypophysis hormone, which generates impulses that could lead to a low level of hypophysis hormone.

There is also increasing proof suggesting that the peripheral β adrenergic receptors are poorly regulated during the overtraining syndrome.

Although there seems to be an increased secretion of noradrenalin during the exercise in the case of over trained athletes, the change in the heart rhythm suggests that the heart, the muscles and possibly some other tissues are less receptive to the effects of the catecholamine (Jeukendrup and Colab 1992).

Our study was conducted during a macro-cycle on a football team in the 3rd league of the

football championship, in the period of time August 15th, 2010 – November 15th, 2010.

We started from the hypothesis that the study of the blood leucocytes can be an important factor in determining the installation of overtraining as well as in surpassing this state.

We periodically analyzed the evolution of leucocytes by collecting samples twice a week, after the training sessions focusing mainly on physical training.

Most of the over-trained athletes recorded an abnormal decrease of the number of leucocytes in the blood, which means that the regular monitoring of the blood can be a factor in determining the moment when the exercise becomes too intense.

In certain cases, the long-term exercise indicate a large number of neutrophils in the bone marrow and it seems to be possible that prolonged exercise repeated during many weeks or months might in fact drain the bone marrow of its mature neutrophils.

The measurements performed showed the fact that the nutrition including carbohydrates during the prolonged exercise significantly reduces the increase in the number of neutrophils; it also prevents the functional failure of the neutrophils noticed during the tests performed without supplements containing carbohydrates.

Since during the recovering hours following the exercise the number of neutrophils in the blood continues to increase and the lymphocytes in the blood continue to decrease. The ratio comes back to normal 5 to 9 hours after the exercise, in case the exercise was long and straining enough. The change can still be noticed 24 hours after the exercise. (Fig. 1)

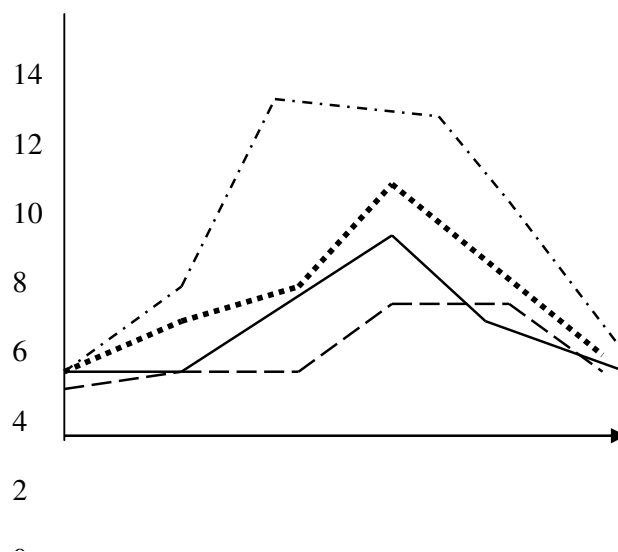


Figure 1. Changes in the neutrophils / lymphocytes (N / L)

The number of lymphocytes changes during the exercise and training.

During a heavy training, the lymphocyte ratio decreases. However, this ratio was not proved to be useful in giving a diagnostic for the athletes suffering from the overtraining syndrome as compared to the healthy and properly trained athletes.

Monitoring the heart rhythm:

We also used the heart monitoring in order to help detecting the first stages of overtraining. An increased heart rate during rest (usually measured by palpation after the athlete wakes up in the morning) can indicate fatigue or overtraining.

We used a group of 16 well-trained football players subjected to a training programme during which the period of work per week was increased by 45%, the maximum heart rate decreased significantly once the overtraining appeared, more exactly after a first stage of overtraining appeared.

In the case of over-trained athletes, the heart rate during sleep increased by an average of 2 beats. Besides, their pattern of heart rhythm during the night was less regular and the peaks were higher after overtraining.

Table 1. Blood immunity and biochemical variables at rest, during the normal time for the athletes

| Normal training | | Overtraining | |
|------------------|-----|--------------|-------------------------------|
| Lymphocyte level | 1.2 | 1.6 | Additional training intervals |
| Plasma cortisone | 422 | 466 | |
| Plasma glutamine | 680 | 630 | |
| plasma CK | 130 | 561 | |

At the end of October, we reduced the work volume to the level it had before the beginning of the study, while the intensity remained the same, and the full recovery was achieved within three weeks.

Conclusions

The control over the state of overtraining and especially over its first stage allows the coach to interfere in due time in order to eliminate this type of fatigue. Especially in the case of sports games, the coaches have the reserves or in exceptional cases even a second team who can replace during a few games the athletes who accidentally entered the state of overtraining.

The practical overtraining factors could be the ones that could be measured in the lab and offered to the athletes. The identification of the common factors among the over-trained athletes as compared to the well-trained athletes could allow for an appropriate intervention in order to prevent a much serious stage of the overtraining syndrome.

The continuous measurement of the cardiac rhythm, sometimes by means of telemetry, even during the sleep, as well as the blood analyses, can become real tools for the coach who can thus maximize the effort in such cases, according to the individual differences and, more importantly, can use the whole performance capacity of the athlete.

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Étude sur l'importance de la leucocytes et du rythme cardiaque la détermination de la surentraînement

Résumé: Les conséquences de surentraînement varient de l'altération de la force musculaire fonction de la motivation. La physiopathologie de surentraînement peut inclure douleurs musculaires et de faiblesse, hormonales et hématologiques changements, l'humeur changements, la dépression et les problèmes nutritionnels tels que la perte d'appétit et de la diarrhée

Les athlètes qui souffrent du syndrome de supraentrenement sont souvent immunodépresseurs, les plus fréquents astuces d'être rectifié le système immunitaire et stress chronique aiguë. Contrôler l'entrée à l'état de supraentrenement et en particulier l'état naissant il permet entraîneur d'intervenir dans le temps d'éliminer ce type de la fatigue

En particulier dans les sports jeux disponibles à l'entraîneur les joueurs en réserve ou même les équipes exceptionnelles II, qui peut remplacer le prix quelques mesures accidentelle entrées dans un état de supraentrenement.

Mots-clé: effort, le surentraînement, leucocytes

Studiu privind importanța de leucocite și a ritmului cardiac în determinarea supraantrenarea

Rezumat: Consecințele supraantrenamentului variază de la alterarea funcției musculare la motivație. Fiziopatologia supraantrenamentului poate include dureri musculare și slăbiciune, schimbări hormonale și hematologice sau de dispoziție, depresii și probleme de nutriție cum ar fi pierderea apetitului și diareea

Sportivii care suferă de sindromul de supraantrenament sunt deseori imunodepresivi, cele mai frecvente indicii ale deficienței sistemului

imunitar fiind stresul cronic și acut. Controlul intrării în stare de supraantrenament și în special al stării incipiente a acestuia permite antrenorului să intervină în timp util pentru eliminarea acestui tip de oboseală. În special în jocurile sportive antrenorul are la dispoziție jucătorii de rezervă sau în cazuri excepționale chiar de la echipa a II a care pot suplini, preț de câteva etape eventualele intrări accidentale în stare de supraantrenament.

Cuvinte cheie: efort, supraantrenament, leucocite

METHODS AND MEANS OF GROWTH OF THE MOTOR DENSITY, IN THE LESSON FOR HIGH SCHOOL, PHYSICAL EDUCATION (9th grade)

Asist. univ. Cicma Ioan Teodor

Abstract: This paper present an experiment that involved the use of several ways, to increase the driven density, experiment which finally, showed us, the effectiveness of these ways

Keywords: driven density, growth, lesson, high school

The vast majority of specialists, considers that the present stage of evolution and development of physical education and sport science, is necessary to seek ways to practice the physical exercises, to respond appropriately to the social orders, given to the complex educational – instructive process to multilateral training of the human personality.

The necessity and need for physical exercise, systematic practice has become a axiomatic for the contemporary man.

Physical education, conducted among young school generation, is the best organized subsystem, at its level, there existing specially trained teachers, in teaching physical education, like compulsory discipline of education, specific programs, various form of organization and practice of physical exercises by students, and their performance evaluation based on evidence and fixed criteria.

The school physical education, is the activity that aims for striking a better balance balance, between intellectual and physical demands, intellectual effort and recreational activities, an extremely important goal, if we place set the concerns for a harmonious, multilateral, body, development first.

The aims of physical education in schools, represents a materialization of a wholesome educational system goals, taking into account the functional and physical motor abilities as well as the cognitive, emotional and social performance necessary for the development of the human personality.

Goals stand for a multitude of objectives that aim at acting and working upon the human personality as a whole.

The need for the implementation of certain dynamic measures is stronger in this case than for other discipline.

The social tasks of this activities, have increased in importance and complexity, having regard to the consequences of sedentary activity, imbalance created between the physical and intellectual activities, thanks to unilateral solicitations, that requiring the extensions of the relaxation actions, at increasing of the influences directed towards body's strengthening, to combat the effects of unilateral work.

Physical education and school sports remain constant concerns called to share the responsibility for everybody involved in the process of training the younger generation in the spirit of health care and biometrical capacity enhancement.

Physical education represents a form of interpersonal in terms cultural values and social

So education represents a complex process of socialization and individualization of humans in their way towards humanity ascent.

At present, we meet regularly the term of efficiency, in all spheres of social activity.

Locating it within the content of physical education class efficiency that thing would mean meeting certain result basic requirements.

For performing any motric act, (action or activity), a greater or lesser amount of muscular and nervous energy has to be consumed.

When the energy amount consumed is higher than the regular parameters, the fatigue condition appears and is usually manifested by specific phenomena, reducing or removing such a condition is to be achieved by adequate rest.

The relationship between effort and rest, called the determination of effort, is fundamental in a physical education class, although this does not have the same weight and importance, as in the sports training classes.

Findings that an increased effort carefully blended throughout the physical education class, would negatively influence the students behaviour with other disciplines, "causing" decreased concentration possibilities and a certain decrease in the students receptivity are unfounded.

Any human body trained for effort making takes it easier any transition towards another kind of strain or tension having a faster return (from it) and always improving the mechanism relying on the strengths of his will.

The progressive increase in the amount of effort becomes necessarily motivated for what seems appropriate at a certain time is of such a common and exciting nature to the extent that it might not bring about any adaptation impact changes.

As compared to the full duration of the lesson, the fact leads towards two types of density, namely:

a). the motor density, that motor activity of the subjects and have the formula:

$D.M. = \frac{\text{effective work time, (at one subject)}}{\text{time of a decision}} \times 100;$

b). the pedagogic density concerning the teacher activity, that needs to be particularly careful on the one hand, and the subjects on the other hand, having the following formula:

$D.P. = \frac{\text{time spent over the necessary didactic decisions (explanations, demonstrations, etc)}}{\text{the time for the lesson}} \times 100;$

The report of these two types of density, is determined by the type of each lesson.

Thus the share of educational density increases, when lessons include the themes with learning objectives.

There are ongoing permanent efforts to find operative ways and other means, to optimize the educational process.

The main criterion for assessing the lesson effectiveness is the density level in all the manifestations.

In the physical education lesson, the relationship between the three types of density (motric, pedagogical and physiological), is not exhaustively dealt with, the solutions leading towards a higher quality level as well as practical efficiency.

Following the above process, the need to perform an observant research shall lead up the possibility of secondary school students participation in an instructive-educational process specific for the physical education discipline displayed as a top preference of all disciplines.

Assuming that, only by measuring and judging, we can have the dimension a phenomenon or activity application intended to be studied, controlled but particularly directed towards the finality, for one, set the following assumptions:

-- Determining the influence of the material conditions, on the lesson density, and implicitly its effectiveness;

-- Studying the optimal mode, of theme merging actions in the lesson so that its motric density and the related theses as well as the pedagogical and physiological density, should reach as far as possible the parameters required in the current material conditions by the methodical approach and other methodological findings (60-65% of the lesson time, representing up to 30-35 minutes);

-- Lesson density is a problem not only the form, but rather substance;

-- Establishing efficiency following on the operating system use must take into account the necessity of objectification and optimization of the instructive-educational process, making every effort to improve the lesson density as accurately as possible in terms of its clearness and exactitude.

Based on these reasons and assumptions the present work aims at be pleading in favour of the system modernization, stream-lining the instructive-educational learning, working and challenging the teacher as a specialist if not inviting him to set the scientific bases for the pre-requisites of concrete objective work.

An appropriate use of the lesson time and planning in carrying through the topics and meanings as requested by the curriculum requirements and the actual school facilities and resources as well as a proper use of the local school area.

These measures that contributed to improve the density resulted from should become stereotyped experiences (become relatively "automatic"), for each physical education and sport teacher.

A great general physical training concern for the teacher still should be the high density lesson carried out under restricted areas.

This emphasizes the obligation of the teacher preparation for the lesson, seeking new methods and efficient means.

For the success of the present study, an experiment was performed for the 9th grade students in the high school "A Saligny", in Brăila for over 24 weeks.

We relied, in carrying out that experiment, on the main research methods such as: pedagogical observation, experiment, statistical-mathematical and graphical method.

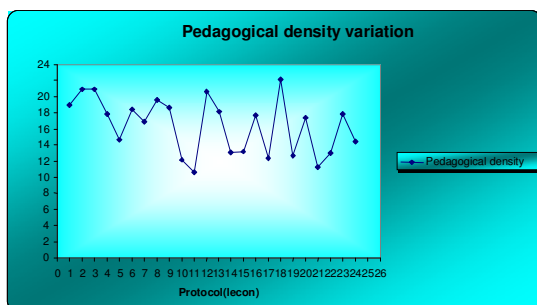
In this experiment, were used the most efficient methods and means, materialized by driving systems and the observations results were recorded in the lesson protocols and converted in percents.

As a final idea, we can say that, although the subject has been studied and researched by many experts and practitioners in the reference domain, still

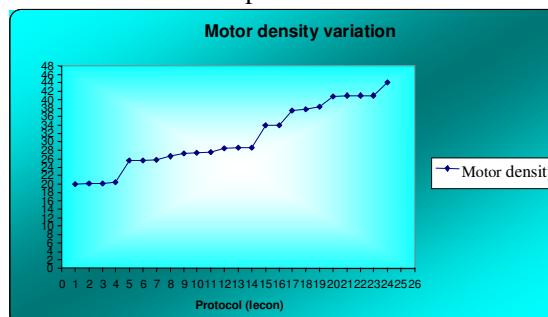
many of the reasons leading towards a low density lesson miss their target, the topic being always actual.

Below, are the graphical representation, of the pedagogic and motor density variations, and the graphic the two density, to each other.

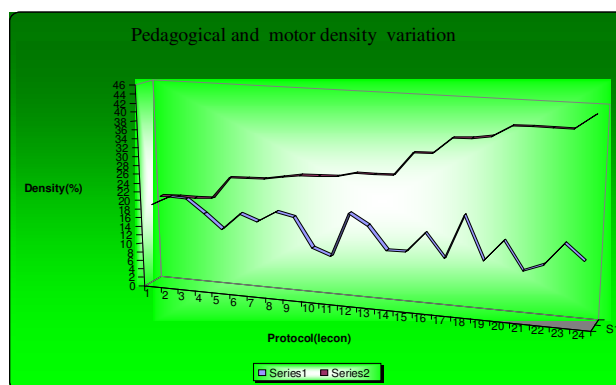
Graphic No. 1



Graphic No. 2



Graphic No.3



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La densité motrice et l'importance de son développement, a l'école secondaire (neuvième année)

Résumé: Dans les suites, je vais vous montrer avec aider d'un expériment l'importance de développement et l'efficacité de la densité motrice et l'efficacité des methods utilisées á neuvième année.

Mots clés: développement, densité motrice, densité pédagogique, l'école secondaire

Densitatea motrică și importanța dezvoltării sale, la liceu (clasa a IX-a)

Rezumat: În cele ce urmează, voi demonstra cu ajutorul unui experiment, importanța dezvoltării și eficientizării densității motrice precum și eficacitatea metodelor utilizate, la clasa a IX-a.

Cuvinte cheie: dezvoltare, densitate motrică, densitate pedagogică, liceu

THE BIOMECHANIC ANALYSIS OF THE ARTICULATION TRAJECTORY ANKLE, KNEE AND HAUNCH IN THE TECHNICAL EXECUTION OF THROWING "TWO- HANDED CHEST PASS"

Ciocoiu Dana Lucica

Faculty of Physical Education and Sport University "Dunarea de Jos" Galați

Fleancu Julien Leonard

Faculty of Physical Education and Sport University of Pitești

Summary: *The present work is a sample from an experimental ample study which followed the optimization of technical part in the basketball game, but also general aspects regarding the professional training of students in this faculty. The researched problem was the poor level of technical training at "Basketball" basic course in the present conditions of reduced number of hours, crowded analytical programs and non- partitioned efficiently from the point of view of the content game and the lack of a modern methodology of learning, evaluating, correcting errors of content, resolved by using a video analysis specialised software.*

Key words: *spatial parameters (segments trajectory), video analysis, biomechanical analysis, articulation ankle- knee- haunch, technical training, throwing two- handed chest pass.*

The literature has approached this notion of biomechanics and its application in our domain underlines the important role which has brought to perfect and effect his technique (C.Tarabas, 2001; I. Iacob, E. Budescu, 2005; E. Merticaru, E. Budescu, R. Iacob, 2005; G. Nenciu, 2005; O. Djamo, D. Stanca, 2006). The specialized program of video analysis was used in other technical programs specific to the basketball game and other sport disciplines (I. Dospineanu, G. Nenciu, V. Potop, M. Crețu, 2005; M.Crețu, 2006; D.L. Ciocoiu, M. Crețu, 2007; D. L.Ciocoiu C. Ciorbă, 2008, D. L.Ciocoiu, 2009; C. Preda, 2010, etc).

Banding is an important element in basketball which supposes collective involvement (C. Hânsa L.Călin, 2004; A. Moanță, 2005; J.L. Fleancu, 2007, etc).

In the basketball game the feet represent a mobile and elastic support ready for landings, stopping, changing of directions, all co-ordinated with the hands. In the basketball game, the static activity is performed by the legs and the pelvis which are situated below the body's center of mass and suffers multiple changes due to the game's conditions. These facts have an important role in assuring the

equilibrium and enhance an efficient support in dynamic conditions. The biomechanical analysis made by applying the specialized soft (*Physics ToolKitt-version 6.0*) for the technical procedure throwing a two- handed chest pass, determines a series of patterns for the horizontal position (X_m) and vertical (Y_m) of the trajectory ankle, knee, haunch. The movement moments analyzed by a methodical point of view were: **M1**- the initial position; **M2**- holding the ball; **M3**- amplitude motion; **M4**- movement coordination; **M5**- releasing the ball pass.

In table 1 are presented the involvement of the ankle articulation when conducting the technical procedure throwing of a chest pass, and also the coordinates obtained by the help of video-analysis program along all the five moments.

At the beginning of the movement, the ankle articulation trajectory create a vertical motion trajectory from 0,08m and is constant for the first three points (the initial position, holding the ball, amplitude motion), then comes a descendent variation till the releasing point of the ball with 0,98m. The horizontal indicator (X_m) has a variation between 0,09m – 0,33. The data is presented in table 1.

Table 1
Data concerning the ankle coordinates in all five moments for the technique of throwing a chest pass when the ball is held between both hands

| Time | The data coordinates for the ankle in all five moments | | | | | |
|----------|--|-------|-------|----------|-----------|----------|
| t(s) | X1(m) | Y1(m) | R1 | Dx1(m) | Dy1(m) | D1(m) |
| 0,00E+00 | 0,098 | 0,083 | 0,128 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| 3,30E-02 | 0,113 | 0,083 | 0,14 | 0,015 | 0,00E+00 | 0,015 |
| 6,70E-02 | 0,113 | 0,083 | 0,14 | 0,015 | 0,00E+00 | 0,015 |
| 1,00E-01 | 0,113 | 0,075 | 0,135 | 0,015 | -7,50E-03 | 0,017 |
| 1,33E-01 | 0,338 | 0,983 | 1,039 | 0,24 | 0,9 | 0,932 |

Specific patterns for the horizontal (Xm) and vertical (Yy) variation of the trajectory for the knee and haunch for the technique of two-handed ball chest pass are presented in Figure 1.

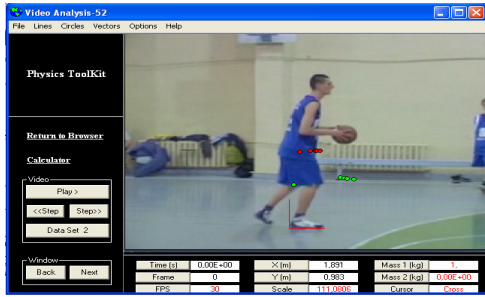


Figure1. Presentation of movement points at the level of the knee and the haunch

The knee articulation is a technical execution from 0,54m with the vertical trajectory (Ym) constant in the first four points of movement (the initial position; holding the ball; amplitude motion; movement coordination) and slightly down in the fifth

point (releasing the ball – 0,53m). The horizontal indicator (Xm) of the knee trajectory articulation has small variations to close and upward movement of all five points (0,25m – 0,33m -figure 2). The knee coordinators are presented in table 2.

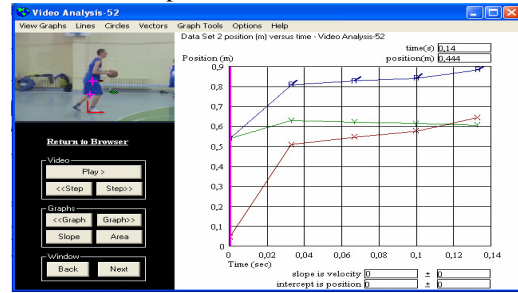


Figure 2. The graphic of the knee joint position on X and Y(m) axes for the technical procedure:two-handed ball chest pass in all the five movement points

Table 2

Data processing to knee coordinates in all five points of movement for throwing the ball with both hands from chest

| Time | The data coordinates for the knee in all five moments | | | | | |
|----------|---|-------|-------|----------|----------|----------|
| t(s) | X2(m) | Y2(m) | R2 | Dx2(m) | Dy2(m) | D2(m) |
| 0,00E+00 | 0,255 | 0,548 | 0,604 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| 3,30E-02 | 0,278 | 0,548 | 0,614 | 0,023 | 0,00E+00 | 0,023 |
| 6,70E-02 | 0,3 | 0,548 | 0,624 | 0,045 | 0,00E+00 | 0,045 |
| 1,00E-01 | 0,308 | 0,548 | 0,628 | 0,053 | 0,00E+00 | 0,053 |
| 1,33E-01 | 0,33 | 0,533 | 0,627 | 0,075 | -0,015 | 0,077 |

The haunch articulation has a vertical trajectory (Ym) which is executed from 0,97m and is constant in first four points of movement, but also an upward tendency to the fifth point at 0,98m. On horizontal the haunch trajectory starts the movement from 0,08m and stops at 0,33m; the difference between the first and the last point is 0,25m. (Figure 3). Data processing for haunch coordinates in all five points of movement are presented in table 3.

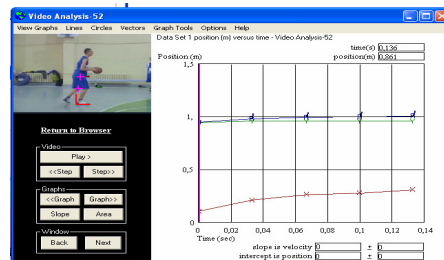


Figure 3. The graph of the haunch joint position on X and Y(m) axes for throwing the ball in all five points of movement.

Table 3

Data processing for the knee coordinates in all the five points of movement for throwing two-handed ball chest pass

| Time | The data coordinates for the haunch in all five moments | | | | | |
|----------|---|-------|-------|----------|----------|----------|
| t(s) | X1(m) | Y1(m) | R1 | Dx1(m) | Dy1(m) | D1(m) |
| 0,00E+00 | 0,083 | 0,975 | 0,979 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| 3,30E-02 | 0,218 | 0,975 | 0,999 | 0,135 | 0,00E+00 | 0,135 |
| 6,70E-02 | 0,263 | 0,975 | 1,01 | 0,18 | 0,00E+00 | 0,18 |
| 1,00E-01 | 0,285 | 0,975 | 1,016 | 0,203 | 0,00E+00 | 0,203 |
| 1,33E-01 | 0,338 | 0,983 | 1,039 | 0,255 | 7,50E-03 | 0,255 |

Processing and interpretation of data obtained in this article, underlines that the joint the

ankle, knee, haunch trajectory participates at the technical procedure of two-handed ball chest pass

different in all the five points of movement. Analysis of the technique with specialized video analytics program will assist in identifying objective motion moments.

Conclusions:

- The video analysis method presents an interactive working relying on the specialised software for the used parameters which can help building an efficient methodical step for start-learning-consolidation procedure of two-handed ball chest pass.
- The specialised video analysis of two-handed ball chest pass delineates objectively its sequences.
- The analysis reveals the major joints involved in the procedure of two handed ball the chest.
- Recovery of practical and methodical obtained data, determines an efficient and rational procedure of two-handed ball chest pass at any stage of training.

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Analiza biomecanică a traiectoriei articulațiilor gleză, genunchi și sold în execuția procedeului tehnic pasa cu două mâini de la piept

Rezumat: Lucrarea prezintă este un extras dintr-un studiu experimental amplu, care a vizat în special optimizarea componentei tehnice în jocul de baschet dar și aspecte generale privind procesul de pregătire profesională a studenților din cadrul facultăților de educație fizică și sport la disciplina “Baschet” curs de bază. Problema cercetată a constituit-o nivelul deficitar de pregătire tehnică a studenților la disciplina „Baschet” curs de bază în condițiile actuale cu număr redus de ore, programe analitice aglomerate și necompartimentate eficient din punct de vedere al conținutului jocului și lipsa unei metodologii moderne, de învățare, consolidare, evaluare, depistare și corectare obiectivă a greșelilor de tehnică, soluționate în cercetarea realizată, prin utilizarea unui software de analiză video specializată.

Cuvinte cheie: parametri spațiali (traiectoria segmentelor), analiza video, analiza biomecanică, articulație sold, gleză, pregătire tehnică, pasa cu două mâini de la piept.

L'analyse biomécanique de la trajectoire cheville - genou - hanche dans la procédure de jeter au panier avec deux mains étant debout

Résumé: ce travaille est un extrait d'un étude expérimental qui a visé premièrement l'optimisation du component technique de basket-ball mais aussi des aspects générales regardant le processus de préparation professionnelle des étudiants de la Faculté d'Education Physique et Sport au discipline « Basket-ball » cours de base. La problème enquête a été le niveau déficitaire de préparation technique des étudiants dans les conditions actuelles avec un nombre réduits des heures, des programmes analytiques agglomérés et non compartimentés efficient du point du vue du contenu, la manque d'une méthodologie moderne d'apprendre, consolidation, évaluation, correction des fautes par l'utilisation d'un software d'analyse vidéo spécialisé.

Mots clé: paramètres spatiaux (la trajectoire des segments), vidéo analyse, analyse biomécanique, articulation du cheville genou hanche, training technique, passe avec les deux mains de la poitrine.

THE EFFECTIVENESS OF THE FINALITY AT A GROUP OF YOUNG PLAYERS (17 TO 18 YEARS OF AGE)

Lector univ. dr. Aurelian Drăgan
Facultatea de Educație Fizică și Sport
Universitatea « Dunărea de Jos » Galați

***Summary:** The present research reflects the efficacy of the finality as following from the selection of the individual and collective means which lead to the progress of the technical factor and technico-tactical factor with direct effect over the game.*

***Key words:** effectiveness; dribbling; sticks; half-back; attacker.*

Introduction and aim:

In football, the players must have a very wide scale of driving skills which are particular for game and thus to cope the various situations.

So, in this research we propose to tackle some aspects concerning the effectiveness of the finality in the game of football.

The final aim of our scientific research is to establish and apply a didactical strategy which is specific for the sportive training and is oriented towards the growth of the efficacy of the game in the particular attack for 17 to 18 young footballers.

In this sense, we suppose that if we apply a programme of training which has target the development of the play tactics in the particular attack, we improve the game in finality and we may enhance the further evolution of the team.

Material and methods of the research:

The subjects which were tested make share from the youngsters team of football F.C. Oțelul Galați and they are borned in 1993. The team researched was made up from six players which evolve, in the frame of the team, on places of half-backs, attackers. The experiment was achieved in the period 15.08.2009-1.05.2010, on the field of the football team F.C. Oțelul Galați.

We achieved the next investigations: waist, weight, dribbling through sticks followed by shot at goal, shot at goal, shot at goal from to centre, to strike the ball with the head.

For to solve the objectives of the research we use some methods: the experiment, the statistical methods and the graphical and tabelar method.

The results of the research:

For to appreciate the technical qualities which are specifically for the play in attack, we consider right conclusive the next investigations:

1. dribbling through sticks followed by shot at goal

- the player which is situated at 30 metres face of goal conducts the ball in speed through 5 sticks placed from 3 in 3 metres, while around the surface of penalty he executed strong shot at goal. The exercise it repeats by each subject of 8 times. We follow the number of shots which it achieved on the space of the goal.

2. shot at goal

- the exercise consists in the execution of 8 shots at goal from at the distance of 16 metres and the goal is divided in transversal mode in two halves. The player accomplishes four shots in a half and four shots in the other half of goal. It considers with successful the shots in which the ball is shoted with the full shoe lace and in which she exceeds the line of the goal in air.

3. shot at goal from to centre

- the player situated at 16 metres face of goal, receives on low, 4 centres of on right and 4 centres of on left from the lateral zone of the frame of 16 metres. He has the task to shot the ball from a one touching from the zone of 11 metres, to score goal and to come back on 16 metres and after to repeat the exercise.

4. to strike the ball with the head

- the plater situated at 16 metres of goal, receives on upper part, 4 centres of on right and 4 centres of on left from the lateral zone of the frame of 16 metres.
- The has the task to strike the ball with the hread, to score goal and to come back on 16 metres and after to repeat the exercise.

The general data of the group

Table no.1

| No. Crt | Name | Age | The place in team | The waist | The weight |
|------------|------|------------------|-------------------|----------------|------------------|
| 1 | S.C. | 16,3 | Half-back | 177,8 | 64 |
| 2 | I.M. | 16,7 | Half-back | 172,5 | 61,9 |
| 3 | O.C. | 16,4 | Half-back | 170,6 | 63,4 |
| 4 | S.M. | 16,5 | Attacker | 171,4 | 71,8 |
| 5 | A.I. | 16,4 | Attacker | 178,2 | 59,9 |
| 6 | P.P. | 16,5 | Attacker | 179,5 | 60,9 |
| X \pm DS | | 16,46 \pm 0,13 | | 175 \pm 3,92 | 63,65 \pm 4,27 |
| CV | | 0,83 | | 2,24 | 6,71 |

Table no. 2

The values of the group

| No. crt. | Na me | Dribling through stiks followed by shot at goal | | Shot at goal | | Shot at goal from to centre | | To strike the ball with the head | |
|------------|-------|---|-----------------|----------------|-----------------|-----------------------------|-----------------|----------------------------------|--------------|
| | | Initial | Final | Initial | Final | Initial | Final | Initial | Final |
| 1. | S.C | 4 | 5 | 4 | 5 | 4 | 6 | 4 | 5 |
| 2. | I.M | 5 | 5 | 5 | 7 | 6 | 7 | 4 | 6 |
| 3. | O.C | 5 | 6 | 4 | 6 | 4 | 6 | 4 | 6 |
| 4. | S.M | 5 | 6 | 4 | 5 | 6 | 7 | 3 | 6 |
| 5. | A.I | 6 | 7 | 5 | 8 | 4 | 7 | 4 | 6 |
| 6. | P.P | 5 | 6 | 5 | 7 | 5 | 7 | 5 | 7 |
| X \pm DS | | 5 \pm 0,63 | 5,83 \pm 0,75 | 4,5 \pm 0,54 | 6,33 \pm 1,21 | 4,83 \pm 0,98 | 6,66 \pm 0,51 | 4 \pm 0,63 | 6 \pm 0,63 |
| CV | | 12,64 | 12,90 | 12,17 | 19,12 | 20,33 | 7,74 | 15,8 | 10,53 |
| T | | 5 | | 5,96 | | 5,96 | | 7,74 | |
| P | | <0,005 | | <0,005 | | <0,005 | | <0,005 | |

Table no. 3

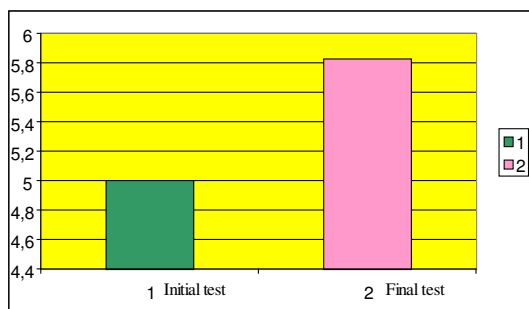
The results of the group tested at the specific tests – initial test

| Nr.crt. | Ex.1 | Ex.2 | Ex.3 | Ex.4 |
|------------|--------------|----------------|-----------------|--------------|
| 1. S.C. | 4 | 4 | 4 | 4 |
| 2. I.M. | 5 | 5 | 6 | 4 |
| 3. O.C. | 5 | 4 | 4 | 4 |
| 4. S.M. | 5 | 4 | 6 | 3 |
| 5. A.I. | 6 | 5 | 4 | 4 |
| 6. P.P. | 5 | 5 | 5 | 5 |
| X \pm DS | 5 \pm 0,63 | 4,5 \pm 0,54 | 4,83 \pm 0,98 | 4 \pm 0,63 |
| CV% | 12,64 | 12,17 | 20,33 | 15,8 |

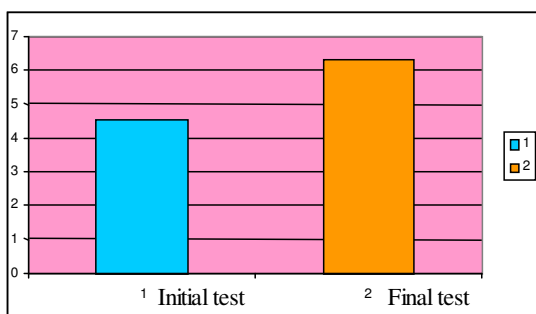
Table no. 4

The results of the group tested at the specific tests – final test

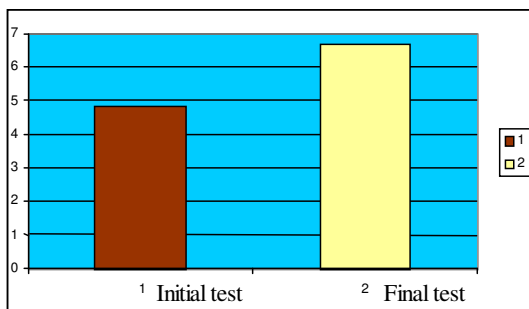
| Nr.crt. | Ex.1 | Ex.2 | Ex.3 | Ex.4 |
|------------|-----------------|-----------------|-----------------|--------------|
| 1. S.C. | 5 | 5 | 6 | 5 |
| 2. I.M. | 5 | 7 | 7 | 6 |
| 3. O.C. | 6 | 6 | 6 | 6 |
| 4. S.M. | 6 | 5 | 7 | 6 |
| 5. A.I. | 7 | 8 | 7 | 6 |
| 6. P.P. | 6 | 7 | 7 | 7 |
| X \pm DS | 5,83 \pm 0,75 | 6,33 \pm 1,21 | 6,66 \pm 0,51 | 6 \pm 0,63 |
| CV% | 12,90 | 19,12 | 7,74 | 10,53 |
| T | 5 | 5,96 | 5,96 | 7,74 |
| P | <0,005 | <0,005 | <0,005 | <0,005 |



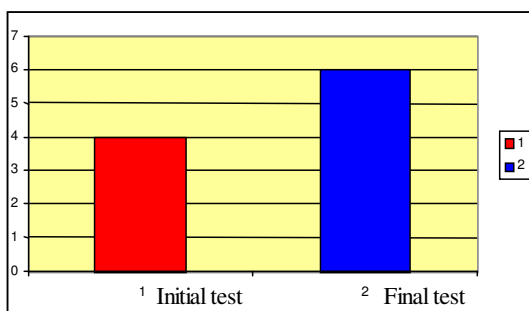
The type no. 1 The dynamic of the values in the frame of the tested batch, the final test in comparison with the initial test at dribbling through stiks followed by shot at goal



The type no. 2 The dynamic of the values in the frame of the tested batch, the final test in comparison with the initial test at shot at goal (statical ball)



The type no. 3 The dynamic of the values in the frame of the tested batch, the final test in comparison with the initial test at shot at goal from to centre



If we compare the results of the tested players, we can to appreciate so:

- *dribling through stiks followed by shot at goal:*

At this exercise, the tested players significantly improved the performances at the final test in comparison with the initial test ($t=5$, $p<0,005$).

- *shot at goal, statical ball:*

In the frame of this exercise we can to observe that the players obtained significant results more good at the final trial ($6,33\pm1,21$ face of $4,5\pm0,54$, $t=5,96$, $p<0,005$).

- *shot at goal from to centre:*

At this exercise the players obtained significant results more good at the final test in comparison with the initial test ($6,66\pm0,51$ face of $4,83\pm0,98$)

- *to strike the ball with the head:*

At this exercise we can to establish that at the final test the players obtained significant results more good ($6\pm0,63$ face of $4\pm0,63$, $t=7,74$, $p<0,005$).

Conclusions:

- By means of the significant improvement of the specific technical methods concerns the Pass Attack in football, we prove our research hypotheses on the effectiveness of reaching a finality;

- The comparisons achieved between the initial test and final test reflect significant progres of the players in the specific exercises;

- Using combined qualities under the game conditions to reach finality, they improved the game on the stage with or without the ball.

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La efficience du finalité à une groupe de juniors avec la âge de 17-18 années

Résumé: La présent recherche reflète la efficience du finalisation, consequence du sélection concernant à les moyens individuel et collective qui conduire à le progrès du factor technique et technique-tactique avec effet direct sur le jeux.

Mots clefs: efficience; dribling; jalons; demi; attaquant.

*Eficientizarea finalizării la o grupă de juniori cu
vârsta de 17-18 ani*

Rezumat: Prezenta cercetare reflectă eficiența
finalizării ca urmare a selecției celor mai

semnificative mijloace individuale cât și colective ce
au condus la progresul factorului tehnic cât și
tehnic-tactic cu efect direct asupra jocului.

Cuvinte cheie: eficiență; dribling; jaloane; mijlocaș;
atacant.

**THE IMPLEMENTATION OF THE STRATEGY CONCERNING THE
SELECTION AND PREPARATION OF THE FOOTBALLERS (9 TO 10
YEARS OF AGE)**

Lector univ. dr. Aurelian Drăgan
Lector univ. dr. Dumitru Barbu
Facultatea de Educație Fizică și Sport
Universitatea « Dunărea de Jos » Galați

Summary: We rely in our research experiment on those training improvement
means that might lead to the 9 or 10 year child positive evolution in football

Key words: means; selection; preparation; indexes; technical factor.

Introduction and aim:

This research has the aim to apply in the practical
activity the effective models means measuring
concerning the sportive selection of children.

This paper gives evidence of the sportive
performance index development for a 9 to 10 year old
group of children over a year's time.

Also, this research supports the qualitative
growth of the selection process concerning the young
footballers and it contributes through her theoretical
and practical side to establishing the selection mode
of the children in football.

We suppose that if we manage the players'
training program relying on their age peculiarities and
having as a main objective the technical evolution of
the game, a significant improve shall follow as for as
the technical level is concerned.

Material and methods of the research:

The subjects are the components of the batch
from the Children and Youth Training Centre of F.C.
Oțelul Galați. The group tested consisted in 10
players. The experiment carried out in the period
20.09.2009 – 10.05.2010, on the field of the football
team F.C. Oțelul Galați.

We achieved the next investigations: waist
grading, weight grading, maintaining control of the
ball in the air, maintaining control of the the ball in
alternative mode between the legs, taking the shot at
goal, taking over the ball with the side.

To carry out the objectives of our research, we
relied on such methods as: the experiment, the
statistical methods as well as the graphical and tabular
method.

The results of the research:

The test average values concerning the waist and
weight grading of the players tested are framed within
their specific age limits.

Table no.1

The general data of the batch

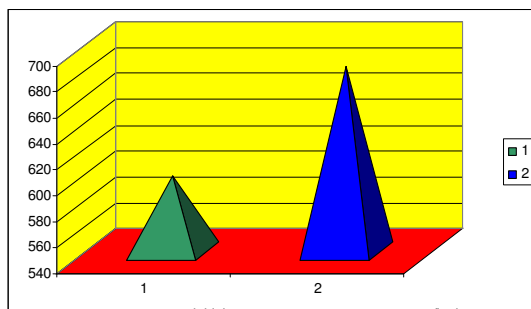
| No. Crt | Name | The waist grading | The weight grading |
|------------|------------|-------------------|--------------------|
| 1 | N.D. | 135 | 34 |
| 2 | L.D. | 126 | 26 |
| 3 | G.L. | 134 | 28 |
| 4 | B.D. | 122 | 20 |
| 5 | M.M. | 127 | 25 |
| 6 | A.I. | 132 | 29 |
| 7. | R.V. | 123 | 22 |
| 8. | M.M. | 130 | 25 |
| 9. | N.D. | 126 | 26 |
| 10. | T.T. | 133 | 24 |
| X \pm DS | X \pm DS | 128,5 \pm 4,63 | 25,9 \pm 3,87 |

| | | | |
|----|----|------|-------|
| CV | CV | 3,60 | 14,95 |
|----|----|------|-------|

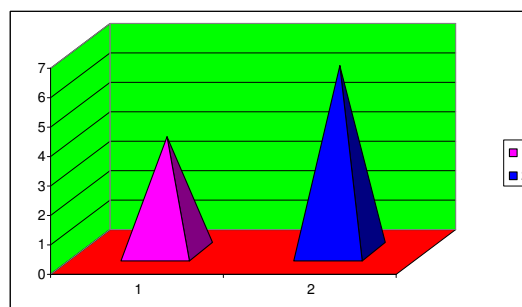
Table no. 2

The values of the batch

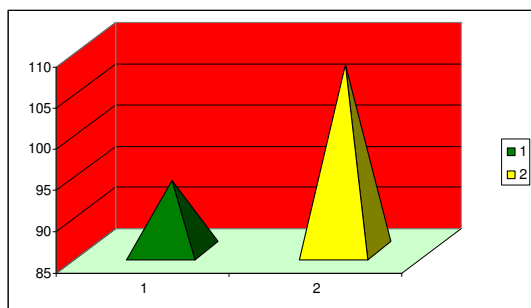
| No. crt. | Name | Maintaining control of the ball in the air | | Maintaining control of the ball bouncing between the legs in the alternative mode | | Taking the shot at goal | | Taking over the ball with the side | |
|----------------|------------|--|-----------------------|---|-------------------|-------------------------|----------------|------------------------------------|----------------|
| | | Initial | Final | Initial | Final | Initial | Final | Initial | Final |
| 1. | N.D. | 88 | 200 | 24 | 44 | 4 | 6 | 3 | 5 |
| 2. | L.D. | 126 | 185 | 33 | 48 | 4 | 6 | 3 | 6 |
| 3. | G.L. | 185 | 350 | 35 | 50 | 3 | 6 | 3 | 7 |
| 4. | B.D. | 650 | 850 | 77 | 85 | 6 | 7 | 2 | 6 |
| 5. | M.M. | 145 | 200 | 36 | 44 | 4 | 6 | 3 | 7 |
| 6. | A.I. | 85 | 110 | 32 | 40 | 3 | 6 | 4 | 7 |
| 7. | R.V. | 2618 | 2700 | 314 | 345 | 4 | 7 | 4 | 7 |
| 8. | M.M. | 1116 | 1150 | 153 | 160 | 3 | 7 | 3 | 6 |
| 9. | N.D. | 525 | 600 | 121 | 135 | 3 | 6 | 2 | 5 |
| 10. | T.T. | 440 | 480 | 110 | 125 | 5 | 6 | 3 | 7 |
| X \pm D S | X \pm DS | 597,8 \pm 781,98 | 682,5 \pm 782,88 | 93,5 \pm 89,73 | 107,6 \pm 94,39 | 3,9 \pm 0,99 | 6,3 \pm 0,48 | 3 \pm 0,66 | 6,3 \pm 0,82 |
| CV | CV | 130,81 | 114,70 | 95,96 | 87,73 | 25,48 | 7,66 | 22,23 | 13,06 |
| T | T | 4,61 | | 6,07 | | 7,85 | | 15,45 | |
| P | P | p< 0,005 | | < 0,005 | | p< 0,005 | | p< 0,005 | |



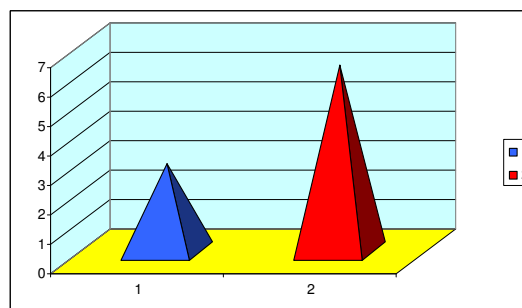
The type no. 1 The dynamics of the values in the frame of the tested batch, the final test in comparison with the initial test for maintaining control over the ball in the air



The type no. 3 The dynamics of the values in the frame of the tested batch, the final test in comparison with the initial test for taking the shot at goal



The type no. 2 The dynamics of the values in the frame of the tested batch, the final test in comparison with the initial test for maintaining the ball bouncing between the legs in the alternative mode



The type no. 4 The dynamics of the values in the frame of the tested batch, the final test in comparison with the initial test for taking over the ball with the side

Also, we can mention that:

- at the exercise for maintaining control of the ball in the air through successive strokes, we observe a positive evolution of the results between the two tests and we can establish that there are significant differences at this exercise ($t = 4,61$, $p < 0,005$);

- at the exercise for maintaining the ball bouncing between the legs in the alternative mode, we can say that at the final test the players obtained significant results more good face of the initial test ($t = 6,07$, $p < 0,005$);

- at the exercise taking the shot at goal, we observe a positive evolution of the results between tests. Also, there are significant results between the initial and final test ($t=7,85$, $p < 0,005$);

- at the exercise taking over the ball with the side, we establish a positive evolution of the results between the two tests. It observes that at this exercise the players obtained significant results more good at the final test comparative with the initial test ($t=15,45$, $p < 0,005$).

Conclusions:

- The hypothesis of the research was confirmed, the means of training conducted at a improvement of the technical level of the children: the respect of the methodic of preparation concerning the control of the ball, leadings with come-backs, the shooting of the ball, the entering in possession;

- The comparisons made between the initial and final testing bring forward a significant progress of the players for all the four types of exercises;

- The dosage of the effort in the preparing – leisure symbiosis refered to the morpho-functional particularities conducted at qualitative growths in a period of time very short for the researched group;

- We propose the increase of the number of trainings hours for developing the technical level of 9-10 years of age children;

- We propose the individual work for a player or group of players which can lead to the progress of

the children concerning the improvement of the technical level.

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La implementation du stratégie concernant la sélection et préparation des footbaleurs de 9-10 années

Résumé: Par cette recherche nous réfléchirons dans quelle manière l'amélioration des moyens d'entraînement à l'âge de 9-10 années conduire à positive conséquences d'évolutions pour les enfants dans football.

Mots clefs: moyens; sélection; préparation; indices; facteur technique.

Implementarea strategiei privind selecția și pregătirea fotbalistilor de 9-10 ani

Rezumat: Prin această cercetare dorim să observăm în ce mod îmbunătățirea mijloacelor de antrenament la vârsta de 9-10 ani poate să conducă la urmări pozitive ale evoluțiilor copiilor în fotbal.

Cuvinte cheie: mijloace; selecție; pregătire; indici; factor tehnic.

JUDO-THE ALTERNATIVE METHOD OF THE CONTEMPORARY EDUCATION

Prof dr. hab. Veaceslav Manolachi U.S.E.F.S. Chişinău

Conf dr. Chirazi Marin F.E.F.S. Iaşi

Conf dr. Roşu Daniel F.E.F.S. Piteşti

Conf dr. Ion Ene Mircea F.E.F.S. Galaţi

Motto

*„JUDO is the most efficient use of physical and mental energy.
Thus, the discipline, the ultimate goal in judo is to be used as
a means of education and self improvement to bring a positive
contribution to the Company”*

Jigoro Kano



Summary: *The whole educational process of teachers / coaches, and those who teach judo, aims solely to educating the personality and the character of the students / pupils. The activity of children / youth during lessons / training may contribute to developing major traits of character, particularly those of will and of moral rectitude that are required especially by specific judo relationships*

Key words: *education, discipline, character*

Aspects of current educational system

- *Current educational system brings a lot of unnecessary information.*

Children and youth learn how to operate with logical facts but do not know how to deal with failures. They also learn to solve math problems, but do not know how to resolve existential conflicts. They are trained to make calculations without making mistakes, but life is full of contradictions and problems that cannot be calculated. This is because their intelligence was blocked, we've turned into working machines, and they are turned into learning machines. They are reduced to plain hard disks.

- *Misuse of memory functions*

Memory is overrated by the current Romanian educational system. Children are forced to store information they will never use again in the real world or information they will never need in their future existence. The current number of schools is greater than at any other time, but they do not produce people who can think and it's no wonder that students have lost their appetite for learning. On the other hand, media offers the fast escape, as by its powers it seduces the young

minds taking them to other virtual worlds and placing them in the middle of different virtual activities such as sports, warfare, romance. This bombardment of stimuli that come from television and the internet act subconsciously, increasing their need for pleasure in real life. And, all of a sudden, real life becomes dull and unattractive, and they will be forced to find powerful stimuli, day after day, for them to feel pleasure. All this generates volatile personalities, unstable and unhappy.

- *We inform and not form*

We do not aim at forming the young people, but informing them. They know more about the world they are in, but do not know anything about their inner side. Education is increasingly devoided of emotional ingredients and produces young people who rarely know to ask for forgiveness, recognize their own limitations or understand the one in front of them. The result? A generation of children and young people more mentally troubled than any other in human history: depressed children, teen agers who develop obsessive syndromes of panic, shyness, phobias or aggression. In addition, more frequently than not they seek refuge and

pleasure in the consumption of tobacco, alcohol and drugs.

Why Judo?

- It contributes to maintaining and strengthening health;
- It ensures the involvement of physical and mental reflexes and reactions
- It provides a good system of self defense
- It leads to confidence and relaxation by its regular practice;
- It contributes to a practical philosophy of life
- It uses breathing exercises and meditation
- It helps develop concentration
- It contributes to enhancing physical fitness strength
- In the dojo (training hall) you can meet interesting people of a strong character
- It provides a pleasant way to spend the time.

Coach's role in shaping athletes' personality

- Each coach has to know to use all his/her educational resources all the time he/she coaches his/her sportsman, i.e. in training, competition and training camps.
- The effectiveness of these means of simultaneous action is largely determined by the coach. As a manager of the teaching process, he exerts a direct influence on his athletes, as he becomes their role-model. All his students will look up to him/her and will be inspired by his/her way of pertaining to sporting and social events, to the club, to collective goods, to work itself. This influence is transferred upon the students even if the coach is sometimes unaware of it.
- Depending on the intensity of moral and professional experiences, the coach has a positive or negative influence upon the personality of the sportsman. Starting from relatively constant manifestations of the athlete during training or competition, the coach through his interventions, applies appropriate educational principles in a creative manner, using the current means of teaching or practice variants, such as:
 - analysis of the situation that has occurred indicating its positive and negative sides;
 - tracing tasks (helping partner organization or collective action, specific motor action, etc.), solving which, the athlete realizes the consequences of his wrong behavior or attitude that justice had to take;
 - reprimand, with explanations or even elimination of collective, limited time or long;
 - praise (known in its variants) in smaller or larger teams;

- debate on ethical issues, education, that allows analysis, development and even the manifestation of positive personality traits etc.

What are these social expectations?

- ☉ We educate how to have a realistic valuable judgment in what regards our own skills by confronting the limits of the social and the individual.
Stimulating capacity of will and character traits that orders a polar axis features such as: courage and prudence, confidence and doubt, respect and affirmation of individuality, community, loyalty perfect competition through respect, friendship, honor, honesty and desire to win. With all these attributes, judo, martial arts in general are the most concrete and actual premises of the construction of moral personality ;
- ☉ To develop friendly relations and mutual understanding between people of opposite internationalist spirit rational narrow and exclusive, chauvinism and racism - (new challenges of education) All those coming to the objectives and directions, support the idea that teachers and coaches to promote the sport as a modern science as a field of high social value.
- ☉ Development of motrical skills performed concurrently with the general moral-psychological development, in its structure qualities occupies a special volitional place.
- ☉ As sportsman will be formed with positive motivational structures, special driving skills, knowledge and the self, he will co-participate in setting goals and training methods. In this way, the athlete's optimal stimulation is achieved and consequently, we can talk about the transition to self-education in terms of personality.
- ☉ *The efficiency of the educational work of the coach is not alone in that it correctly forms the enduring athlete's personality traits, but also in that he helps him to gradually build himself/herself, thereby creating the premises for the athlete to be able to educate others in turn.*
- ☉ This is what education brings forth in the field of high-performance sport.
- ☉ In what regards the sport, the coach has duties similar to those of an excellent professional and educator. He acts in a wider social environment whose complexity is determined by the existence of human beings (athlete) and the group of educators that gather their formative efforts (school, family, social environment); the coach is the subject of educational action

ROLE COACH; the structural scheme of the PEDAGOGICAL qualities

| Quality construction | Organizational Skills | Communication Skills | Teaching qualities | Gnostic qualities |
|---|--|---|---|---|
| Anticipated teaching | Capacity adequate guidance in this situation | Ability to obtain prestige activity | The ability to speak logically, calmly and expressively | Perceptual ability to interpret information |
| Teaching Imagination | The ability to seek and to strive towards the goals | Ability to manage own feelings and provisions | Emotional expressiveness | Capacity for sympathy and empathy |
| Ability to structure and proper teaching material for future work | Ability to self-organization The ability to adjust the relations of the group | Pedagogical tact Communication Initiative | Capacity for clear articulation Ability to divide the speech tempo The ability to manage the volume of speech Ability to direct mimicry Ability to direct students' attention | Teacher observation Logical thinking |

Coach's role should not be limited to a mere transmission of information, be it of strict speciality, but rather to a process that efficiently combines the strict speciality information with behavioural patterns that contributes to training athletes' harmonious personality, so that, through this process of influencing them, they would be able to make a positive contribution to society.

What and how can that be taught by judo?

- As educational matters stand with judo lessons, it is early in the ritual of "hello" greetings that they have a significance of holding the coach in great respect, as well as the judo hall (Dojo), the mat, the partner or the opponent.
- For education to strictly stick to the hygienic rules, both individually and on the level of the group, it should be a duty to one's own self but also towards the group members.
- Examinations for providing the colored belts can and should become moments to educate a correct attitude towards work for the continuous improvement and the endeavours it requires.
- In the training direction, judoka must learn the techniques but not mechanically. In this way, the athlete develops the ability to discern, the effectiveness of his capacity of thinking and forecasting, analysis of the actual combat situations and resolve them quickly.
- The actual game and the fight (Shia) will educate the athletes to win, promoting courage, self-control, calm to cope with the pain in some cases, the ability to always know the situation in combat, the ability to deal effectively with situations arising, in other words, a set of mental qualities useful in everyday living.

- It educates at the same time the sense of moral behavior to the opponent, each taking care not to endanger the health and physical integrity partner, fair play or honesty to recognize defeat and considered by a real appreciation.
- Taken together, we can say that the main feature of the Judo is the dynamism taking place in meetings. The large differences that arise in the manner of conducting the fight during a meeting reflects the rapid alternation of action.
- The place mat is a continuous struggle thought the request also requires a dose mobility due to cortical growth continuous effort.

Sports activities in its performance subject to certain young judoka planned effort, as it adjusts to successes and failures, gives great satisfaction of self finding limits and qualities, it is customary to fend for themselves in certain situations and to collaborate with colleagues, and preparing for the future however.

CONCLUSIONS

- Use of the judo specific physical and psychological preparation of students, helps to achieve diversification educational process;
- Judo martial arts in general can be helpful, but not replace the value of private practitioners;
- Knowledge of students is a necessity of extreme importance for ensuring the effectiveness of the educational process, responding to her concrete needs and many of them mention a few:
 - Knowing the age and sex specific, the general direction of the pedagogical process;
 - Establishing the purpose, the means of training, selecting channels of stimulation in other words, adaptation-educational school system the individual peculiarities of students to obtain maximum efficiency;

- structure and crystallization of students' personality in accordance with "model" social requirements;
- development of the students' willingness and ability of self-knowledge and based on this need for self-education and learning.

Teachers of physical education and / or coaches, are asked - as compared with other specialties - advanced knowledge in the direction of counseling students' psychological, pedagogical leadership team in preparation or groups, in activities organized both inside and outside teaching

Here are the seven deadly sins according to experts in education:

1. *To correct in public.*
2. *The express authority aggressively*
3. *Being overly critical: to obstruct the educated childhood*
4. *A rage to punish and put limits without explanation*
5. *Being impatient and choose not to make education any more*
6. *Not taking your word*
7. *To destroy hopes and dreams*

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Education par judo

Résumé: *Le travail entier des professeur, des entraîneurs, aussi aux enseignants de judo, repose prioritairement sur l'éducation du caractère et la formation de la personnalité. L'activité des enfants / des jeunes, pendant l'entraînement peut contribuer à la formation des principaux traits de caractère, particulièrement de la volonté et des traits moraux qui sont sollicités surtout dans les relations spécifiques au judo.*

Mots-clés: *education, judo*

Educație prin judo

Rezumat: *Întreaga muncă educativă a profesorilor / antrenorilor, deci și a celor care predau JUDO, vizează cu prioritate educarea caracterului și cristalizarea personalității. Activitatea copiilor / tinerilor, în lecțiile de antrenament poate contribui la formarea principalelor trăsături ale caracterului, în mod deosebit a celor de voință și a unor trăsături morale care sunt solicitate, mai ales, în relațiile specifice judo-ului.*

Cuvinte cheie: *educație, judo*

SURVEY ON TRAINING IN JUDO FOR CHILDREN OF PRESCHOOL AGE (4-6/7 years)

Teacher drd. Neofit Adriana
School Sports Club Galati

Abstract: *By its contents, by the means used in training, in an attractive form, judo can lead to children's education or to the improvement of their motivity with influences in growth, development and their education. Given the set we wanted to apply a questionnaire designed to set up a poll in our country for experts to determine whether the F.R. Judo welcome and would be of a uniform training programs for young children preschool.*

Keywords: *education, social, health, imagination, creativity, personality.*

In our country, judo, has developed continuously, making it currently one of the basic disciplines of the Romanian sport with the emphasis on

opening educational and recreational functions for children. We know that motivity is the main source and mode of expression, the expression of the children's mental acquisitions in the first years of life.

By its contents, by the means used in training in an attractive form, improvement goals of judo can lead to children's education or to the improvement of their motivity with influences in their growth and intellectual development. The preschool education approach, play is work, leads to the child's learning the basic forms of living, relying on the means of producing and the method of stimulating, according to his necessities, the child's ability and creativity as his right towards freedom of choice.

Given the set we wanted to study to what extent the use of specific and nonspecific attractive means teaching judo for children of preschool age, can lead to the **Implementation of the concept of early training in judo** and thus maximize the effects of the learning process during education.

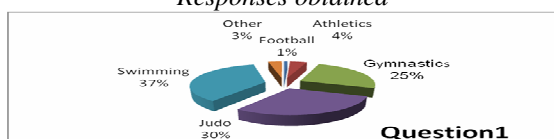
For this purpose, we developed a questionnaire intended to constitute a survey of specialists in our country - Stage questionnaire was applied to judo coaches from 1 to 5 December 2009 - Felix, Oradea, number of coaches - 53.

The questionnaire centralization can be a breakdown of the sample for area localities and those who participated in the survey. Thus in a deeper analysis of these questionnaires, one can get a well structured database that meet the needs of specialists in the function of the specific areas and localitie

1. What are, in your opinion, the most recommended sports at preschool age (4-6/7 years)?

a) Football - ☐ b) Athletics-☐ c) Gymnastics - ☐ d) Judo - ☐ e) Swimming-☐ f) Other

Responses obtained



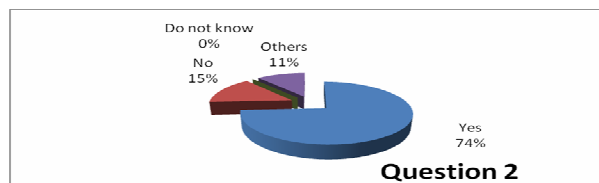
Comments:

As one can see, there is a rate of **37** percentage of options for the friendly F.R. practising Judo **swimming at this age level**, with reserves that have kept the poor or non-existent material basis in some localities in the country or often below the hygiene standards required. Immediately, a **30% favorable reviews have been practicing judo**, respectively, with **25% of the gymnastics** disciplines considered especially favorable in terms of harmonious physical development, knowledge of body movement opportunities and education in all aspects.

2. Do you consider the age of 4-6/7 years appropriate for starting training in judo?

a) Yes - ☐ b) No ☐ c) Do not know - ☐ d) Others - ☐

Responses obtained



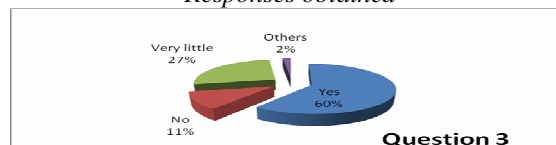
Comments:

A rate of **74** option percentage considered by specialists held the view that the ideal moment to start judo training is the age of 4-6/7 years, taking into account the children's physical development level, their prosocial motivation and their ability to share communication with their training coaches at that age. With a **15%** accounts have not been in favor of practicing judo, respectively, 11% had other options.

3. Have you approached the judo training of children of this age?

a) Yes - ☐ b) No ☐ c) Very little - ☐ d) Others - ☐

Responses obtained



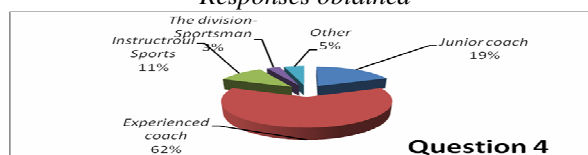
Comments:

60% of the coaches interviewed **without an approach** to the preparation work scientifically developed curriculum for this age, a percentage of **27%** had a **sporadic approach**, 11% did not address training and 2% had **different opinions**.

4. What kind of coach do you think is suitable for the preparation of this age level?

a) Junior coach - ☐ b) Experienced coach ☐ c) Sports instructor - ☐ d) The division- Sportsman e) Other - ☐

Responses obtained



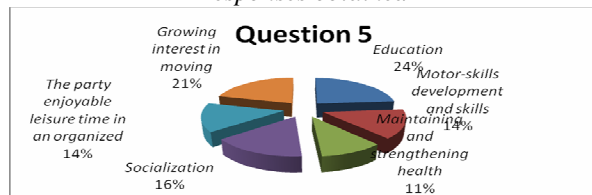
Comments:

62% of respondents **recommended that the experienced coach** to take care of preparing children of 4-6/7 years, relying on the experience of the pedagogical tact acquired. With **19%** was recommended **rookie coach**. **11%** of those who responded, **sports instructor** consider appropriate to deal with this echelon of age, with a rate of **3%** submitted to the idea **that athletes** can guide the training department and **5%** had **other views**.

5. What are the priorities of preparing children of 4-6/7 years?

- a) Education - ☐ b) Motor-skills development and skills ☐ c) Maintaining and strengthening health - ☐ d) Socialization - ☐ e) The party enjoyable leisure time in an organized place and with specialists - ☐; f) Growing interest in moving - ☐ g) Other

Responses obtained



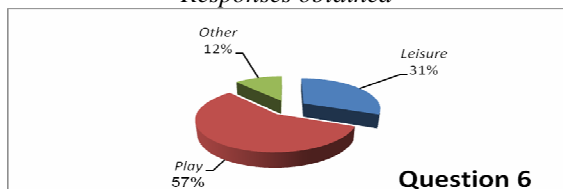
Comments:

A rate of **24** percentage of the specialists in to judo training were favorable in granting priority to 4-6/7 year children **education**, a rate of **21** percentage were interested in the **movement to grow** while **16%** of responses were targeted for **socialization**, up to **14%** were accepted as a priority the **development of the motor skills and qualities** and **the virtues of leisure time spending**. **Maintaining and enhancing health** is another aspect that has received a percentage of **11%** of the responses, which is not less important.

6. What need does judo practicing meet in children?

- a) Leisure - ☐ b) Play - ☐ c) Other - ☐

Responses obtained



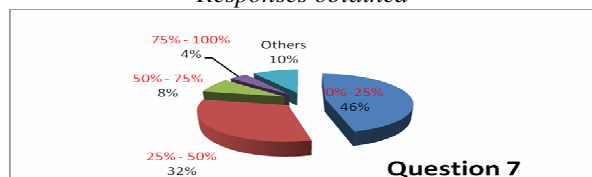
Comments:

57% of options have been favorable to **satisfying the need for play** through participation in judo children. **31%** considered important **leisure** and **12%** had **other views**.

7. What percentage is covered by the preparatory work for children of 4-6/7 years in your city? (Specify location.).

- a) 0% - 25% - ☐ b) 25% - 50% - ☐ c) 50% - 75% - ☐ d) 75% - 100% - ☐ e) Other.

Responses obtained

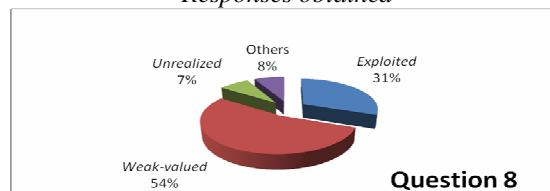


Comments:

The **46%** option rate revealed **that only 25% is covered by the preparatory work for 4-6/7 year children in rural areas**, **32%** believes that, in the areas they inhabit, the rate is **25-50%**, **while 10%** had other coverage margins

than the solutions offered by questionnaire, **8%** of responses were assigned a coverage of **50-75%** and **4%** of respondents felt that coverage is **75-100%** in this age group.

Responses obtained



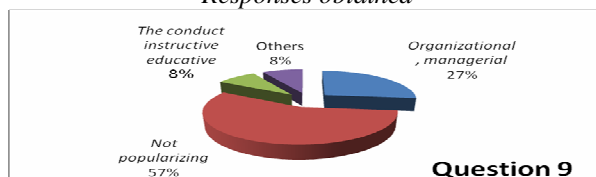
Comments:

In this respect **54%** of specialists felt that the potential is **weakly turned** to county, **31%** believe that it is **exploited**, **7%** see it as **untapped** and **8%** had **other views**.

8. What is your county judo training potential concerning 4 to 6/7 year children education?

- a) Exploited - ☐ b) Weak-valued ☐ c) Unrealized - ☐ d) Others .

Responses obtained



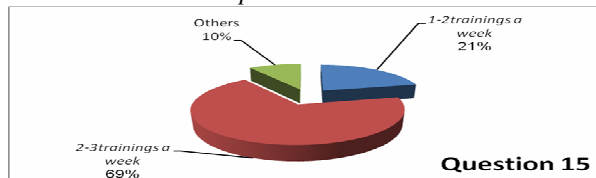
Comments:

A rate of **57%** of those surveyed account **non-popularizing** as the main weakness in training children, while **27%** see **organizational management a short concing**. And **8%** were considered **weaknesses of educational leadership activity**.

15. What do you think would be the optimal number of workouts per week?

- a) 1-2 training programs a week. - ☐ b) 2-3 training programs a week. - ☐ c) Others.

Responses obtained



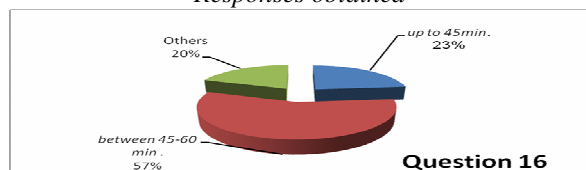
Comments:

69% were in favor of **2-3 workouts per week**, **21%** account for **1-2 workouts as the ideal solution per week**, while a rate **10%** held different views.

16. What is the optimal number of minutes allocated to training?

- a) up to 45min. - ☐ b) between 45-60 min . - ☐ c) Others .

Responses obtained



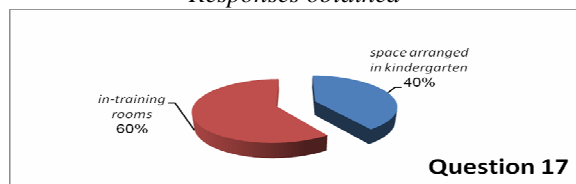
Comments:

A option rate **57%** held the view of **45-60 minutes training period**, **23%** account for **45 minutes training time** and **20%** stated different views.

17. What do you think would the organization of the activity should be?

a) space arranged in kindergarten - ☐ b) in-training rooms ☐ c) Others.

Responses obtained



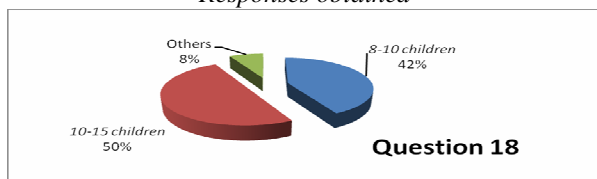
Comments:

A rate of **60%** of the judo specialists held favorable options concerning the business **organization training rooms** and **40%** chose to practise e in **spaces arranged places in the kindergarten**. Advantage and disadvantage range was also accounted for.

18. What is the optimal number of children in the group?

a) 8-10 - ☐ b) 10 -15 - ☐ c) Others.

Responses obtained



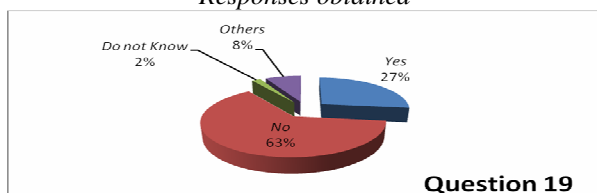
Comments:

50% of experts considered optimum for a group with a total of **10-15 children**, **42%** optimum for a group of **8-10 children**, and **8%** have **other opinions**.

19. Do you consider the presence of parents being a good choice during training?

a) Yes - ☐ b) No ☐ c) Do not know - ☐ d) Others.

Responses obtained



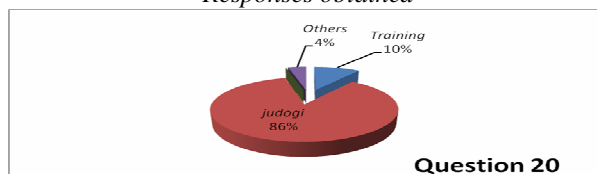
Comments:

63% of specialists is **unfavorable presence of parents** in the training room, bringing various reasons (reduced ability for the children to focus, sometimes change their behavior and reactions to various educational interventions of the coach, etc). **27%** opting for **the presence of parents**, **8%** have **different views**, **2%** - **do not know**.

20. What do you think would be the most appropriate equipment for them? Why?

a) Training - ☐ b) Judogi - ☐ c) Do not know - ☐ d) Others.

Responses obtained



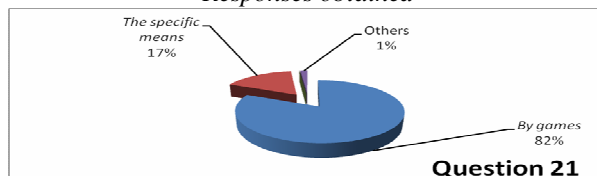
Comments:

86% of specialists had favorable options for use since the first **training kimono**, justifying this by the specific activity, **10%** opt for **training**, **4%** have **different opinions**.

21. What would be the most appropriate way to address the training?

a) By games - ☐ b) The specific means - ☐ c) Do not know - ☐ d) Others .

Responses obtained



Comments:

82% recommended **pieces of advice games and applications**, **17%** choose to **use specific means**, **1%** **other opinions**..

Questions 10, 11, 12, 13, 14 and 22 quantifiable personal views were presented in percentages, but useful approaches for making a training at this age.

Following the project, taking into account the opinions of specialists, we expect that by introducing pre-school age children in the preparation of content specific and nonspecific means judo aimed predominantly harmonious physical development, knowledge at a opportunities to move the body segments, relations established between them, of spatial-temporal orientation and balance, the acquisition of behavioral norms that encourage positive social attitudes, stimulate imagination and creativity, develop communication skills and moral qualities of character, will lead to

transfer after successful practising any sport, including judo.

Sondage d'opinion en regard l'instruction en judo aux enfants d'âge pré-scolaire(4-6/7année)

Résumé: Par son contenu, aussi que par ses moyens utilisés dans le processus de formation, une forme attractive, le judo peut mener à la formation ou à rendre meilleure la motricité des enfants, influençant aussi leur développement physique et leur éducation. Vu ci-dessus nous nous sommes proposés d'appliquer un questionnaire qui vise à devenir un sondage d'opinion des spécialistes de notre pays pour établir les opportunités de l'élaboration et de l'introduction au niveau de la F. R. Judo d'une programme unitaire de formation des enfants d'âge pré-scolaire.

Mots-clés: éducation, services sociaux, de santé, de l'imagination, la créativité, la personnalité.

Sondaj de opinie privind instruirea în judo a copiilor de vârstă preșcolară (4-6/7ani)

Rezumat: Prin conținutul său, prin mijloacele folosite în instruire, într-o formă atractivă, judo-ul poate conduce la formarea sau îmbunătățirea motricității copiilor cu influențe în creșterea, dezvoltarea și educarea acestora. Date fiind cele prezentate ne-am propus să aplicăm un chestionar menit să se constituie într-un sondaj de opinie a specialiștilor din țara noastră, pentru stabilirea oportunității elaborării și introducerii la nivelul F.R.Judo a unei programe unitare de pregătire a copiilor de vârstă preșcolară.

Cuvinte cheie: educație, servicii sociale, sănătate, imaginație, creativitate, personalitate.

METHODOLOGY OF EMPLOYING THE EXPERIMENTAL MODEL FRAMEWORK MEANS OF GYMNASTS' ARTISTIC TRAINING

Lecturer Liușnea Diana Nicoleta, PhD candidate
Prof. Grimalschi Teodor, PhD

Abstract: Gymnasts' properly performance of certain exercises in each period of training, within the experimental model of artistic training, aims at accomplishing a gradual learning to execute movements in a certain direction with a certain amplitude, expressiveness, speed and degree of muscle tension. It should be pointed out that the musical accompaniment has an essential contribution to the gymnasts' artistic training, since it contributes to a faster movements learning and emphasizes, at the same time, the basic elements of a certain movement.

Keywords: rhythmicity, musicality, expressivity, artistic elements, creativity, balance

In training gymnasts a continuous upgrading of the training process is required in order to comply with the current performance requirements [4, 8] – which means that even the artistic training should take this aspect into account. Gymnasts should have a set of abilities that would contribute to the execution of movements involved in all apparatuses with the maximum of amplitude, elegance, and expressivity. Nevertheless equally important are the artistic and movement skills, needed to improve the floor and beam self-chosen exercises [3, 5, 9]. Therefore gymnasts training also includes ballet and rhythmic gymnastics exercises that ensure the learning of the artistic elements

and which provide an excellent means of precision, easiness, expressiveness, development, at the same time contributing to the accomplishment of a proper movement control. [7, p. 185]

The artistic training has been especially designed for each period of training (preparatory period and competition period), having a well-defined structure and content. Each category of means within the artistic training model includes movements meant to ensure the accomplishment of certain artistic training objectives.

The content of the "warming" stage of the choreography exercises that include the wall bar support "3", the exercises performed on the center of the carpet "4" and the special beam exercises "8" have been

the same for the entire experimental period. The exercises intended to develop rhythmicity and body movement musicality "2" as well as the special beam exercises "8" have been employed in the preparatory period – the basic preparatory stage. The exercises intended to develop creativity and expressivity "6" have been employed throughout the entire preparatory period. The elements required by the FRG classification system

and other artistic elements "5" have been employed throughout the entire teaching experiment. Training on the artistic elements and integral artistic exercises "7" has been accomplished in the pre-competition period and during competition period. The exercises are performed on musical accompaniment, with a number of musical phrases required by the artistic training.

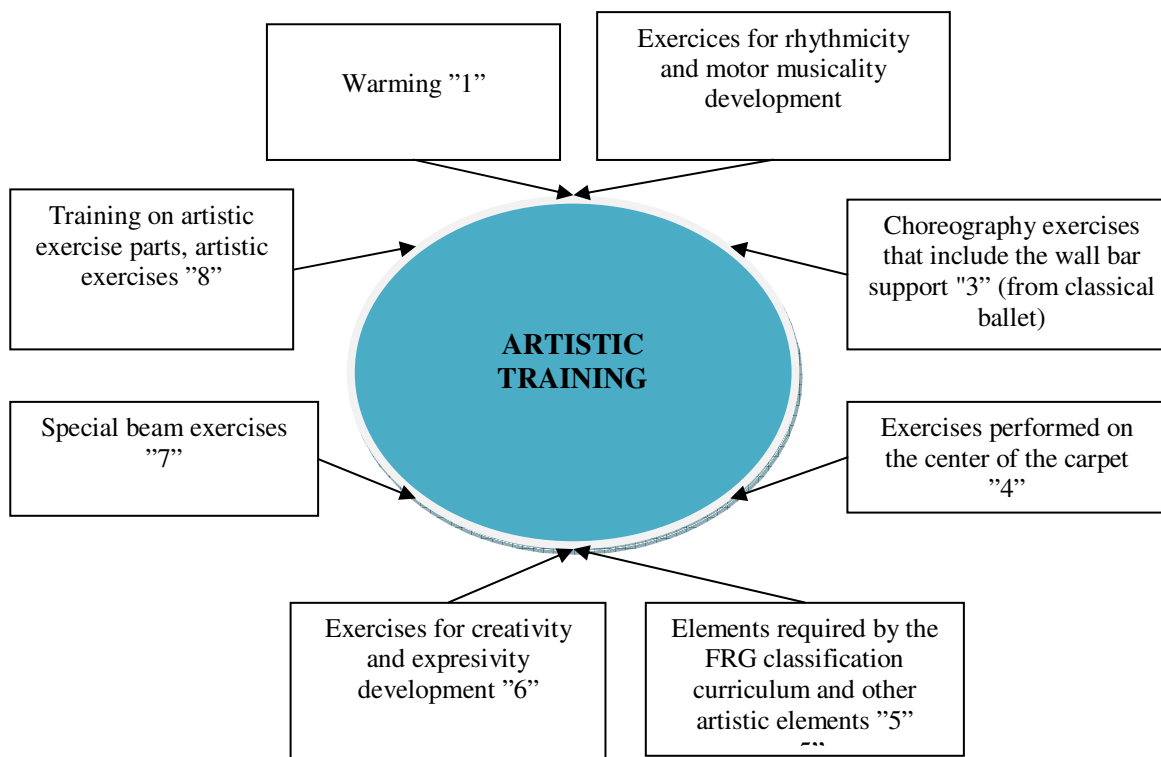


Figure. 2.28. The structure of the artistic training experimental model

The warming "1" stage lasts 30-35 minutes and includes a wide variety of specific means of basic and rhythmic gymnastics. It has been accomplished in the frontal plane, accompanied by music which was intended to combine movement with music. In the warming stage the learning of the general motion properties has been aimed at together with accomplishing a proper posture and the development of movement skills.

Exercises for rhythmicity and motor musicality development "2" included a certain type of movement combinations for each of the four weekly cycles of the basic preparatory phase. Thus, the employed movement combinations aimed at accomplishing the gymnasts balance between the expressive means of music - rhythm, tempo, musical phrase, character, intensity - and the movement expression means which due to coordination rhythmicity the has been very well developed.

According to the experts in the field [2, 6], the movement rhythmicity is represented in gymnastics by the ability to grasp and perform through the motor act of the rhythm particularities of the music features. Moreover the same authors consider that motor musicality is the ability to accomplish a balance between the movements and the particular means of musical expressivity represent by agogics and dynamics.

The exercises that include the wall bar support "3" contribute to the accomplishment of a proper posture, aesthetic movement, the expressivity of executions and plays an important role in the development of the motor qualities performance movements. Exercises including the wall bar support will finally lead to greatness and beauty due to their influence, combinations and artistic positions. The judicious use of exercises with wall bar support

brings an important contribution to the body orientation and moving segments, according to certain planes and directions, developing to a great extent the strength of the large muscles groups, joints mobility, sense of balance, accomplishing a proper and expressive posture, developing general expressiveness of movement [1, p. 299].

The exercises with wall bar support were performed on both sides with the leg from outside, the return being made on the tip toes, with the arms in the crown shape above, on the piano music. When performing these exercises the feet and body posture were permanently controlled, taking into account the requirements of the correct posture and artistic execution. The exercises were performed in their natural order, expressively and in close correlation with the music.

Exercises performed on the carpeted floor center "4" are rhythmic gymnastics specific exercises and contribute to the acquiring of the proper posture on the torso, head and arms level as well as to the coordination and movement expressivity development. In the center combinations, flexibility and mobility exercises and the combination of the relaxation exercises with those of force, in a sequence required by the nature and dynamics of the musical accompaniment contributes significantly to the performance of some artistic executions in a released manner. In order to accomplish a proper posture on the upper body level, several motor structures were used that involve isolated actions on the arms level, acting simultaneously, symmetrically, asymmetrically, sequentially or alternatively. The motor structures with isolated actions on the torso include: bending, twists, rotations, waves. The accomplishment of the correct posture has been aimed at throughout the execution, as well as at the amplitude of movement and the employment motor actions on music.

Elements required FRG classification curriculum and other artistic elements "5". The exercises are performed on the frontal plane on the carpet sides, a great emphasis being put on amplitude, execution expressiveness and proper posture, especially taking into account the age group requirements: the chasse step, 360 degrees passé pirouette, développé step jump, jump with legs folded before shearing, grouped jump.

In order to develop creativity and expressiveness "6" improvisation was used that was accomplished by gymnasts performing their personal combinations of movements on music at first hearing. Thus various musical pieces were used for every four weeks of the preparatory period, a certain kind of music being used. Moreover each gymnast had to create a structure of 8 × 8 stroke movements on a self-chosen song, once a week, i.e. on Saturday.

The improvisation brings its contribution to develop movement coordination and creative ability. Particularly helpful is to improvise on musical accompaniment [7, p. 284].

Special beam exercises "7" have been especially designed to develop the ability to maintain balance in the beam exercise performance and contribute at the same time to the artistic movement accomplishment with proper posture and correct technique, expressivity and rhythmicity. The rational movement of the gravity center and maintaining balance in performing the beam exercises depends on the correct body posture and correct technique of the elements. The exercises were performed in torrents, on each beam; so that when the gymnast reaches the 8th musical phase the movement of the next gymnast begins thus being ensured a proper performance of the beam exercises.

Work on the artistic parts and integral artistic exercises "8". During the pre-competition period and the competition period, the gymnasts' artistic training also included the work on the artistic parts and artistic beam and floor exercises that gymnasts have performed before moving to the apparatuses. They are designed to improve movement, artistic elements and artistic combinations of the freely chosen exercises, while contributing to the development of specific resistance.

By the proper performance of the exercises within the experimental model of artistic training, gymnasts gradually acquire their ability to perform movements in a certain direction with a certain amplitude, virtuosity, expressivity, speed and degree of muscle tension.

The musical accompaniment was performed by a specialist in the field, whose contribution is essential in the gymnasts' artistic training. The music was therefore adapted so that it should meet the requirements of the gymnasts training level, training load and the performed motor structure. Moreover it contributes to a more vivid perception and a better learning of the movement. During the exercise performance, music emphasizes the basic elements of movements of the gymnasts.

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La méthodologie de l'utilisation des moyens dans le modèle expérimental d'entraînement artistique des gymnastes

Résumé: Par l'exécution adéquate par les gymnastes, pendant chaque étape de l'entraînement, des exercices du modèle expérimental de l'entraînement artistique, on acquiert graduellement l'habileté d'exécution des mouvements dans une certaine direction, à une certaine amplitude, expressivité, vitesse et degré de tension musculaire. L'accompagnement musical apporte une contribution essentielle, car il aide à la mémorisation plus rapide des mouvements et souligne les éléments fondamentaux des mouvements.

Mots-clé: rhythmicité, musicalité, expressivité, éléments

artistiques, créativité, équilibre

Metodologia utilizării mijloacelor din cadrul modelului experimental de pregătire artistică a gimnastelor

Rezumat: Prin executarea corespunzătoare de către gimnaste, pe fiecare perioadă a pregătirii, a exercițiilor din cadrul modelului experimental de pregătire artistică, se realizează însușirea treptată a abilității de a executa mișcările, într-o anumită direcție, cu o anumită amplitudine, expresivitate, viteză și grad de încordare musculară. Acompaniamentul muzical are o contribuție esențială în pregătirea artistică a gimnastelor, întrucât contribuie la o memorare mai rapidă a mișcărilor și le subliniază gimnastelor elementele de bază ale mișcării respective.

Cuvinte cheie: ritmicitate, muzicalitate, expresivitate, elemente artistice, creativitate, echilibru

STUDY ON CONTROL PARAMETERS PROVIDED BY MGM TEST

Claudiu Mereuță, Elena Mereuță

"Dunarea de Jos" University of Galati, Romania

cmereuta@ugal.ro, emereuta@ugal.ro

Abstract: The paper presents the control parameters determined while running a MGM test on a group of athletes, consisting of the CVE - energetical variability coefficient and CVS - structural variability coefficient. The results provided by the computer were discussed and analyzed with respect to the mean of the group and the recommended values.

Key-words: MGM test, control parameters, CVE, CVS

1. Introduction

Theoretical and practical knowledge in the field of athletic training and a high quality of competitions, require performing scientific training and finding solutions to all the problems detected when the athletes are tested.

The solutions must be carefully chosen, taking into account the requirements, the principles and the scientific methods regarding the training process, the physiology, the biomechanics, the biochemistry, the hygiene, the pedagogy and the athletes' psychology.

The quality of training must be appraised regarding the following issues:

- The continuity of the training process and the continuity of joining to competitions;
- The dynamics of effort during the training process and during competitions;
- The volume of training, referring also to both training period and competitions;
- The intensity during the training process and competitions;
- The athletes' specialization;

- The interrelation between all the factors involved in the training process;
 - The importance of physical training;
 - The psychological preparation;
 - The individualization of training according to the athletes' peculiarities;
- The training process must be planned attending to:
- Ensure an equilibrium between the training process and the testing and official competitions;
 - Establishing and keeping to the methods and the contents of training before, inter and after competition periods;
 - Choosing the most efficient means for training;
 - Developing the individual abilities;
 - Considering the complex aspects of warming up, regarding the technical, physiological and psychological effects of that important state in the training process;
 - Rational use of time during training;
 - Achievement of tests trails and controls trails.

2. The MGM testing procedure

Investigating the athletes' peculiarities is often performed using tests that reveal both the basic motrical characteristics and the control ones (force, velocity and endurance).

The testing procedure called MGM begins with determining the anaerobe capacity of effort which allows rendition of basic elements of neuro-motrical qualities, energetical and control qualities during a force-velocity effort.

Thus we can highlight the energetical athletes' resources when they perform jumps on both legs and on one hand.

As the effort of the lower limbs is the same in all sports, the results of MGM test are not distorted by athletes' previous abilities, due to the fact that this is an unspecific effort.

Thus, we can highlight the athletes' basic qualities and the information provided by MGM tests are very general and useful for all next training periods.

During this test, the athletes are performing 3 series of 15 jumps, on both legs, on the right leg and, finally on the left leg. A pause of 30 seconds to 1 minute is required, between the 3 series of jumps.

All the jumps are performed on a rectangular carpet (1m x 1.2 m) connected to a data acquisition board. The variable measured is the time spent on air and on ground for each jump; the accuracy of measurements being of a millisecond order.

After the automatic filtering of results, the computer provides only 10 valid jumps which are the starting point of all rating for the control parameters (CVE - energetical variability coefficient and CVS - structural variability coefficient).

These two parameters offer information about the quality of the flying phase control or about the quality of the body's preparation phase for the ground contact.

3. Energetical variability coefficient (CVE) and structural variability coefficient (CVS)

For the experimental phase a group of 20 athletes was tested using MGM test, all data being acquired for each of them. In order to facilitate the interpretation of the results, only the performances of five of them are discussed and analyzed, with the respect to the mean of the group and the standard values in the reference literature.

The control parameters are: CVE and CVS.

CVE is the energetical variability coefficient which provides information about the control state of the energy resources during unspecific motion.

The coefficient CVE is computed automatically using the formula:

$$CVE = \frac{AbsT(Ta_i)}{\frac{\sum_{i=1}^{10} Ta_i}{10}} \cdot 100 \quad (1)$$

where: Ta_i is the flying time for the jump "i".

CVS is the structural variability coefficient which provides information about the athlete's capacity of controlling the ground contact.

The coefficient CVS is computed automatically using the formula:

$$CVS = \frac{AbsT(Ts_i)}{\frac{\sum_{i=1}^{10} Ts_i}{10}} \cdot 100 \quad (2)$$

where: Ts_i is the time on ground for the jump "i".

4. Results and interpretations

For the entire experimental group we have determined the control parameters and using the data collected for each of them, we have determined the mean of the control parameters.

The results for the five athletes considered are shown in table 1.

Table 1- Acquired data for five athletes

| | | | | | | | | | | | | |
|-----------|-----------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| S1 | Both legs | Ground | 0.223 | 0.217 | 0.217 | 0.22 | 0.212 | 0.211 | 0.22 | 0.212 | 0.214 | 0.234 |
| | | Air | 0.484 | 0.46 | 0.514 | 0.45 | 0.51 | 0.502 | 0.486 | 0.487 | 0.499 | 0.464 |
| | Right leg | Ground | 0.302 | 0.287 | 0.293 | 0.303 | 0.321 | 0.291 | 0.313 | 0.279 | 0.291 | 0.31 |
| | | Air | 0.348 | 0.371 | 0.394 | 0.376 | 0.355 | 0.362 | 0.385 | 0.38 | 0.347 | 0.337 |
| | Left leg | Ground | 0.011 | 0.018 | 0.317 | 0.32 | 0.322 | 0.337 | 0.321 | 0.32 | 0.33 | 0.348 |
| | | Air | 0.328 | 0.356 | 0.358 | 0.355 | 0.378 | 0.352 | 0.022 | 0.048 | 0.016 | 0.313 |
| S2 | Both | Ground | 0.17 | 0.19 | 0.175 | 0.183 | 0.176 | 0.166 | 0.161 | 0.2 | 0.164 | 0.163 |
| | | Air | 0.57 | 0.519 | 0.562 | 0.567 | 0.536 | 0.555 | 0.546 | 0.502 | 0.533 | 0.514 |
| | Right | Ground | 0.277 | 0.264 | 0.247 | 0.283 | 0.247 | 0.271 | 0.267 | 0.269 | 0.24 | 0.264 |
| | | Air | 0.43 | 0.46 | 0.433 | 0.453 | 0.447 | 0.445 | 0.429 | 0.424 | 0.439 | 0.423 |
| | Left | Ground | 0.266 | 0.277 | 0.28 | 0.274 | 0.283 | 0.254 | 0.281 | 0.264 | 0.26 | 0.274 |
| | | Air | 0.413 | 0.42 | 0.41 | 0.428 | 0.42 | 0.419 | 0.422 | 0.399 | 0.428 | 0.421 |
| S3 | Both | Ground | 0.226 | 0.202 | 0.201 | 0.211 | 0.202 | 0.229 | 0.198 | 0.215 | 0.22 | 0.197 |
| | | Air | 0.559 | 0.561 | 0.558 | 0.532 | 0.556 | 0.542 | 0.535 | 0.552 | 0.489 | 0.504 |
| | Right | Ground | 0.304 | 0.329 | 0.333 | 0.313 | 0.316 | 0.321 | 0.353 | 0.305 | 0.337 | 0.331 |
| | | Air | 0.422 | 0.029 | 0.457 | 0.021 | 0.391 | 0.342 | 0.374 | 0.407 | 0.415 | 0.377 |
| | Left | Ground | 0.282 | 0.274 | 0.282 | 0.266 | 0.278 | 0.304 | 0.261 | 0.283 | 0.273 | 0.268 |
| | | Air | 0.39 | 0.398 | 0.014 | 0.383 | 0.354 | 0.417 | 0.402 | 0.393 | 0.38 | 0.38 |
| S4 | Both | Ground | 0.213 | 0.174 | 0.169 | 0.171 | 0.244 | 0.197 | 0.194 | 0.18 | 0.207 | 0.183 |
| | | Air | 0.486 | 0.516 | 0.506 | 0.528 | 0.042 | 0.011 | 0.507 | 0.487 | 0.494 | 0.013 |
| | Right | Ground | 0.268 | 0.291 | 0.285 | 0.254 | 0.263 | 0.248 | 0.292 | 0.286 | 0.264 | 0.269 |
| | | Air | 0.353 | 0.323 | 0.336 | 0.354 | 0.342 | 0.359 | 0.312 | 0.309 | 0.314 | 0.34 |
| | Left | Ground | 0.272 | 0.247 | 0.245 | 0.287 | 0.312 | 0.284 | 0.254 | 0.289 | 0.26 | 0.325 |
| | | Air | 0.308 | 0.019 | 0.319 | 0.357 | 0.325 | 0.269 | 0.321 | 0.024 | 0.029 | 0.278 |
| S5 | Both | Ground | 0.237 | 0.231 | 0.223 | 0.211 | 0.219 | 0.225 | 0.228 | 0.213 | 0.223 | 0.216 |
| | | Air | 0.446 | 0.438 | 0.459 | 0.494 | 0.472 | 0.484 | 0.517 | 0.532 | 0.518 | 0.505 |
| | Right | Ground | 0.302 | 0.288 | 0.302 | 0.283 | 0.297 | 0.327 | 0.261 | 0.296 | 0.303 | 0.288 |
| | | Air | 0.375 | 0.376 | 0.385 | 0.352 | 0.338 | 0.313 | 0.378 | 0.383 | 0.356 | 0.353 |
| | Left | Ground | 0.315 | 0.329 | 0.307 | 0.313 | 0.269 | 0.276 | 0.271 | 0.294 | 0.322 | 0.289 |
| | | Air | 0.361 | 0.354 | 0.387 | 0.373 | 0.379 | 0.387 | 0.362 | 0.38 | 0.357 | 0.353 |

The diagrams reflecting the comparisons between each athlete and the mean of the group are shown in fig.2. The mean of the group is depicted in red and we can see the differences of each athlete from the mean, for the periods of time spent on the ground and on the flying phase, during the jump.

We can see that the first athlete's control parameters are close to the mean of the group, only for the jump on his left leg we can see a difference of 21.8% from the mean of the group.

For the second athlete, the situation is more complicated, as his parameters are very different from those of the group. Thus, for the jump on two legs there is a difference of 12.1% for the time on air, a difference of 20.2% for the jump on the right leg on air and 29.3% for the jump on the left leg on air. Another important difference is related to the time on the ground on the jump on two legs, which is smaller by 14.2% than the mean of the group.

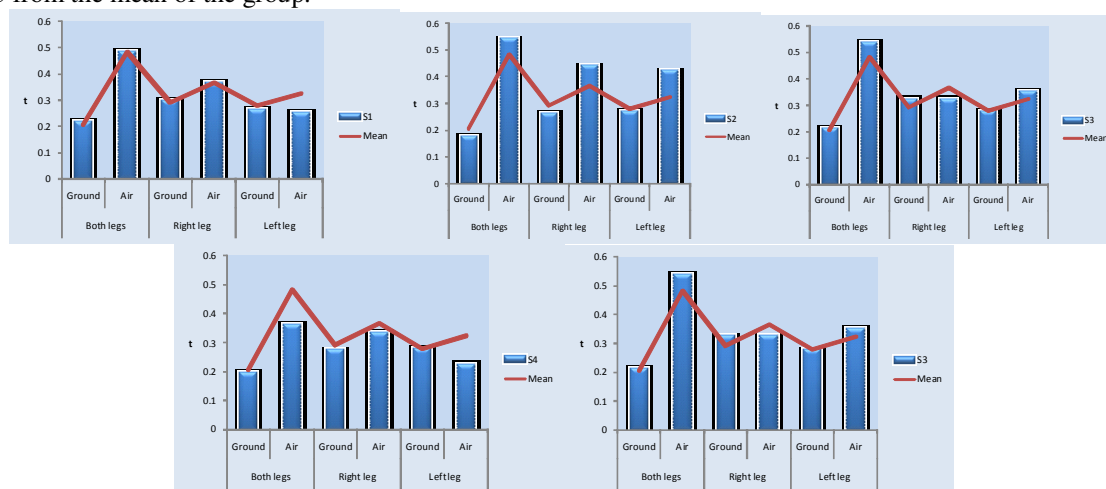


Fig.2 Comparison between the mean of the group and the five athletes' parameters

For the third athlete the differences are by 11% smaller for the time on air at the jump on two legs and for the jump on the right leg on the ground. As for the jump on the right leg, we can observe that the time on the ground is smaller than the mean of the group by 11%.

The fourth athlete has notable differences from the mean of the group, such as a smaller time on air for the jump on both legs by 25.5% than the mean of the

group, while the time on air for the jump on the left leg is smaller than the mean by 30.1%.

Finally, the fifth athlete has no major differences from the mean of the group, but for the time on air at the jump on the left leg, we can see a greater value than the mean of the group by 14.2%.

The control parameters provided by the program (CVE and CVS) are shown in table 2.

Table 2 – Control parameters CVE and CVS

| | S1 | | | S2 | | | S3 | | | S4 | | | S5 | | |
|------------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|
| | Both legs | Right leg | Left leg | Both legs | Right leg | Left leg | Both legs | Right leg | Left leg | Both legs | Right leg | Left leg | Both legs | Right leg | Left leg |
| CVE | 4.47 | 5.1 | 61.65 | 4.36 | 2.88 | 2.09 | 4.59 | 49.57 | 34.06 | 64.91 | 5.57 | 62.6 | 6.63 | 6.38 | 3.64 |
| CVS | 3.16 | 4.37 | 49.95 | 7.34 | 5.31 | 3.61 | 5.64 | 4.73 | 4.34 | 12.08 | 5.74 | 9.75 | 3.66 | 5.75 | 7.31 |

The variability coefficients reveal how the athletes' muscles respond to stimuli. Thus if the ground contact is not achieved at constant intervals in time, it means that the athlete's muscle has different responses to stimuli, and if the intervals of time in air are irregular, it means that the athlete's adaptation to different situation is not so good, and he controls himself less than another person with constant time intervals on air.

The CVE coefficient reveals the automatisms of motions, which is good to be good to be at their highest rate for precise body motion sports and at an optimum rate for contact sports (gymnastics, skating, paddling etc.) and optimum for contact sports (fencing, boxing etc.). A great value for that parameter reveals that the athlete doesn't control the final phases of the motions at high speed.

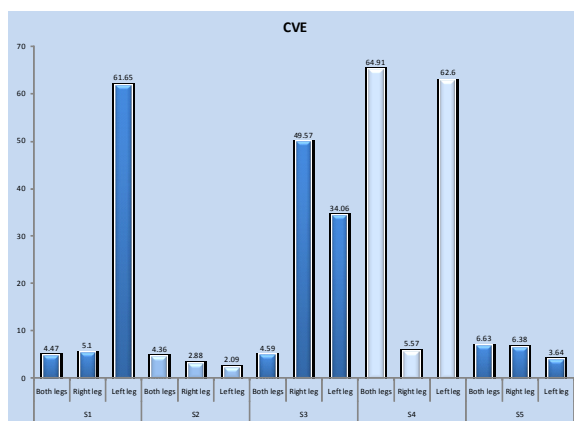


Fig.2 The CVE values for five athletes

Thus, we can see (fig.2) that subject 1 has problems controlling his motions on the left leg (CVE=61.65), subject 2 is controlling very well his motions, subject 3 has real problems when he is in the final state of motion on both right and left leg (CVE=49.57, respectively CVE=34.06), while subject 4 has problems when he is in a final state of an action on both legs.

The CVS coefficient provides information about the capacity of controlling the contact phase with the ground. The optimum value of that parameter is 3-3.5.

Thus, we can see (fig.3) that the first subject has serious problems with controlling the ground contact on the left leg, meaning that he doesn't know his body and doesn't know how to prepare a contact (with an opponent, with a ball or the ground itself).

Some malfunctions might be also ascertained for the subject 4 involved in this study, while its control parameters are greater than the highest accepted value, but he doesn't display major differences from one leg to another, as subject 1 does.

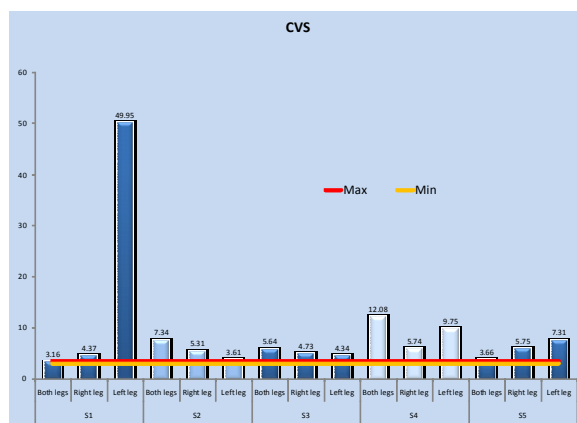


Fig.2 The CVS values for five athletes

All specialists have concluded that there is a correspondence between the structural coefficients determined when jumping on one leg and the way the athlete behaves when his hands are acting. Thus, we can extend our results to hand abilities of controlling the final phases of an action and we can state that one person's capacity of muscle control is the same for the hand as it is for the corresponding leg.

5. Conclusion

The MGM test reveals that the resources generated by the energetical nature of an athlete can be explained while performing a test consisting of jumping on both legs, on the left and on the right leg, as the lower limb is used in all sports and jumping is a natural motion.

The way the muscles act can be evaluated if we can express their matrix of elasticity and rigidity which provides information on the contraction phase of the muscle before the contact and also on the anticipation of the flying phase.

The performance of an athlete is better when he controls better his muscles and he reacts better to all stimuli, continuously adapting to new situations.

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Studiu privind parametrii de control furnizați de testul MGM

Rezumat: Lucrarea prezintă parametrii de control stabiliți în timpul unui test de tip MGM pe un grup de sportivi, reprezentați de CVE - coeficientul de variabilitate energetică și CVS - coeficientul de variabilitate structurală. Rezultatele furnizate de calculator au fost discutate și analizate în raport cu valorile medii ale grupului și cu valorile recomandate.

Cuvinte cheie: testul MGM, parametrii de control, CVE, CVS

Étude sur les paramètres de contrôles prévus par le test MGM

Résumé: Cet article présente les paramètres de contrôle déterminée lors de l'exécution d'un test MGM sur un groupe d'athlètes, composé de la CVE – le coefficient de variabilité énergétiques et CVS – le coefficient de variabilité structurale. Les résultats fournis par l'ordinateur ont été discutés et analysés par rapport à la moyenne du groupe et des valeurs recommandées.

Mots-clés: test MGM, paramètres de contrôle, CVE, CVS

STUDY ON UNIT POWER ENERGETICAL PARAMETER PROVIDED BY MGM TEST

Claudiu Mereuță, Elena Mereuță

"Dunarea de Jos" University of Galati, Romania

cmereuta@ugal.ro, emereuta@ugal.ro

Abstract: This paper presents an energy parameter MGM determined during a test on a group of athletes, namely the average power per unit (PU). The deviation of the average power, considered as the difference between right and left leg, is compared to its optimal value that describes an optimal force-speed preparation of athletes. Also, the energy asymmetries are determined and analyzed.

Key-words: MGM test, energetical parameters, PU

1. Introduction

A continuous improvement of methods and techniques of investigation and testing is proved by the high level of performances in sports, while the athletes' body is subjected to efforts increasingly closer to the limit.

The importance of testing and investigating in sports is revealed by the following:

- The objective results of testing procedures are useful to trainers and technicians for a proper characterization of the athlete performing in a certain branch of sport;
- The trainers can establish if the training process was well conducted comparing the results of the tests in two moments: before and after the training period;
- Every component that competes to achieve performance should be individualized and treated properly;
- Specifying the sources and causes that negatively affect performance, in order to detect them in an early stage and correct them.

To achieve these objectives, an investigation and testing procedure must fulfill the following requirements:

- To be appropriate to the goal;
- To use methods and techniques specific for the competition, training and laboratory stages;
- To be time effective;
- To provide immediate simple and accurate information to trainers.

2. The MGM anaerobe testing procedure

The MGM test highlights the athletes' energy when a series of jumps is performed. The interpretation of results takes into account the viscosity and elasticity of muscular tissue. The effort in this test is characteristic to large groups of muscles and the lower limb can provide such information, as their effort is influencing the results.

The test protocol requires 3 series of jumps, on both legs, on the right leg and on the left leg. The specialists found that the mean of the ground contact time (170-180 ms.) during the jump on both legs is smaller than the reaction time measured during jumping on one leg (300 ms.).

The biophysical models of the muscle are based on the assumption that there is an elastic component, which is very important for the good functioning of the model. They have considered that the muscle acts like a 2 stroke engine, with particular focus on the elastic component of muscle.

3. The power unit parameter

The energetical parameters provided by the MGM test are:

- the average unit power (PU);
- the average jump height (H);
- the repetition velocity (VREP).

The average unit power (PU) or the jumps on both legs, on the right and the left leg, offers information about the conditional training, about the force - velocity as motrical qualities, measuring the power ratio to body mass. The formula used to determine PU parameter is:

$$PU = \frac{\frac{g}{8} \cdot \sum_{i=1}^{10} Ta_i^2}{\sum_{i=1}^{10} (Ta_i + Ts_i)} \quad (1)$$

Where: Ta_i is the flying time for the jump "i"

Ts_i is the contact ground time for the

jump "i".

4. Experimental results and interpretation

For the experimental phase a group of 20 athletes was tested using MGM test, all data being acquired for each of them. In order to facilitate the interpretation of the results, only the performances of

five of them are discussed and analyzed, with respect to the standard values from literature.

The computed values of PU parameter for all the five subjects, together with the maximum achieved PU and the maximum possible PU are shown in table 1.

Table 1 – Computed values for PU parameter

| | | PU | PUmax | Pumax_p |
|----|-----------|------|-------|---------|
| S1 | Both legs | 4.04 | 4.35 | 4.4 |
| | Right leg | 2.42 | 2.72 | 2.78 |
| | Left leg | 1.99 | 4.08 | 4.43 |
| S2 | Both legs | 4.92 | 5.28 | 5.36 |
| | Right leg | 3.3 | 3.52 | 3.65 |
| | Left leg | 3.05 | 3.2 | 3.24 |
| S3 | Both legs | 4.67 | 4.96 | 5.01 |
| | Right leg | 2.37 | 3.18 | 3.31 |
| | Left leg | 2.6 | 2.93 | 3.09 |
| S4 | Both legs | 3.87 | 4.8 | 4.83 |
| | Right leg | 2.22 | 2.55 | 2.56 |
| | Left leg | 1.64 | 2.38 | 2.55 |
| S5 | Both legs | 4.03 | 4.57 | 4.6 |
| | Right leg | 2.4 | 2.69 | 2.77 |
| | Left leg | 2.46 | 2.72 | 2.75 |

For the first subject we can see (fig. 1) that the qualities force-velocity are not at their maximum when he jumps on his left leg, while for the jumps on both legs and on the right leg he almost reaches the maximum power possible.

Subjects 2, 3, 4 and 5 seem to have a better development of both qualities, as they are very close to the maximum unit power, in all cases.

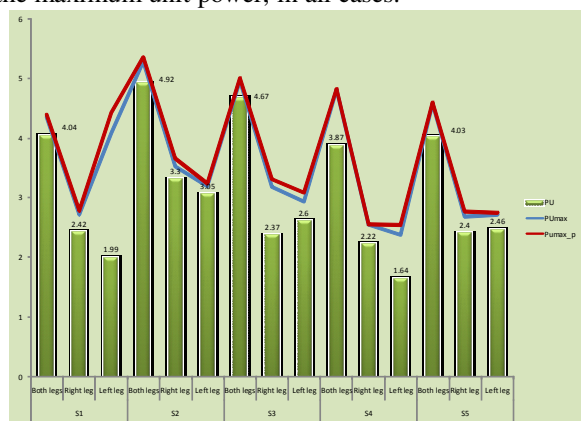


Fig.1 Power unit, maximum power and maximum power possible diagram

For each individual there is a ratio for the qualities force-velocity dependent on the muscular

structure which allows a maximum efficiency in effort. The differential power unit (table 2) between the values computed for both legs, right and left leg reveals the nature of the unbalanced ratio force-velocity, with respect to reference values from literature.

Table 2 – Differential unit power

| Differential power | S1 | S2 | S3 | S4 | S5 |
|--------------------|-------|--------|-------|------|--------|
| Unit F-V | -0.38 | -1.43 | -0.31 | 0.01 | -0.83 |
| F-V [%] | -9.35 | -29.03 | -6.6 | 0.3 | -20.52 |

Thus, we can observe (fig. 2) that only the subject 5 (-0.83) is close to the optimum ratio force-velocity (≈ -1), but all the other subjects present unbalanced ratio force-velocity. Subjects 1, 3 and 4 show an unbalanced ratio of force – velocity, which reveals a lack of force in the training process. As for subject 5, we can see that the unbalance (-1.43) reveals an excessive force in training.

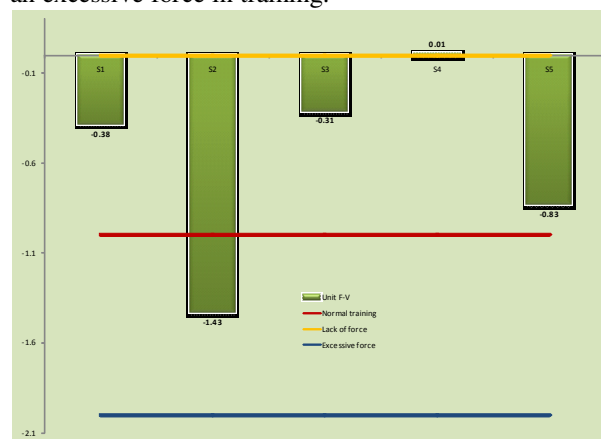


Fig. 2 Differential power

The trainer must act according to the results, ensuring an optimum ratio force –velocity for the athletes which show unbalances.

As for the skewness (table 3), we can notice that only for the fifth subject the characteristic force-velocity is symmetrical for the right and for the left leg (fig. 3) and we also have good results for athletes 2 and 3.

Table 3 – Unit and percentage skewness

| Skewness | S1 | S2 | S3 | S4 | S5 |
|---------------------|------|------|-------|-------|-------|
| Unit skewness | 0.43 | 0.25 | -0.23 | 0.58 | -0.06 |
| Skewness percentage | 17.8 | 7.51 | -9.84 | 26.29 | -2.54 |

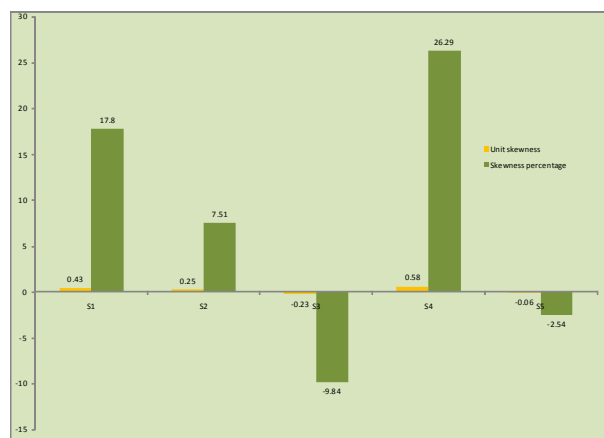


Fig. 3 The skewness

5. Conclusions

The energetical parameter unit power PU provided by the MGM test is important when we have to analyze the ratio force-velocity. The values of that parameter, together with the values of the differential power and the skewness must afford to the trainer, information on the new approaches to be taken into account, in order to get the optimum of the ratio force-velocity.

6. References

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- JURCA I., TIRON C., (1996) *Echipament electronic pentru aprecierea puterii maxime anaerobe*. In: Revista Stiinta sportului. Bucuresti, nr. 3
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Étude sur les paramètres de puissance unité énergétiques fournis par le test MGM

Résumé: Cet article présente un paramètre énergétique déterminé lors d'un essai MGM sur un groupe d'athlètes, à appelé la puissance moyenne par unité (PU). L'écart entre la puissance moyenne comme la différence entre le droit et la jambe gauche, est comparée à sa valeur optimale qui décrit une préparation optimale force-vitesse des athlètes. En outre, les asymétries d'énergie sont déterminées et analysées.

Mots-clés: test MGM, les paramètres énergétiques, PU,

Studiu privind parametrul energetic putere unitară furnizat de test MGM

Rezumat: Lucrarea prezintă un parametru energetic determinat în timpul unui test MGM, pe un grup de sportivi, și anume de puterea unitară medie (PU). Este analizată abaterea diferenței de putere medie între piciorul drept și piciorul stâng, față de valoarea optimă a acestuia ce descrie un optim forță-viteză în pregătirea sportivilor. De asemenea, se determină și se analizează și asimetriile energetice.

Cuvinte cheie: MGM test, parametrii energetic, PU

THE ENDURANCE LEARNING UNIT PROJECTION ON ADVANCED AND LOW-LEVEL VALUE GROUPS METHOD (8TH GRADE)

Mocanu George, Junior Lecturer
„Dunarea de Jos” University of Galati
The Faculty of Physical Education and Sports

Abstract: The planning of physical efforts on various phases (lesson plans) involving the permanent modification of the main physical effort parameters will result in gradual effort demands, thus the body being able to successively adapt to various stimuli, eventually leading to a long-term adaptation, involving the overall functions and systems of the human body (a synergetic effect), an aspect that leads to the neutralization of programmed tasks.

Key words: *lesson plan, differentiated approach, accessibility, stimuli and array methods, physical effort*

Introduction: The beginning of lower-secondary education usually marks a period when *endurance* involves a great amount of aerobic effort, while gradually increasing the difficulty of the tasks (distance and exposure time). Towards the end of the cycle, the methods based on the volume's variation can be combined with the ones based on the variation of intensity, when the body is able to better adapt to the mixed effort capacity (anaerobic and alactacid). Most authors regard puberty as being the most adequate period to form the basis of any eventual future notable performances based on effort and endurance. Working with value groups becomes thus more relevant due to the fact that the amount and intensity of stimuli is bound to be optimal in order to result in the adaptation of the body. Should the intensity of the stimuli be average, then the results are usually expected to be average or close to none, yet should the stimuli be very strong, then the result will only over-work the students and eventually lead to fatigue. The duration of the relaxation

processes should be determined based on the type of effort the students have been exposed to (aerobic, anaerobic, lacticid or alactacid).

The research hypothesis and experiment contents: It has been assumed that the development of motor skills during lower-secondary education, based on a differentiated distribution of the physical effort will lead to an improvement in the effort capacity and in the physical training level. Based on the initial tests, a considered solution consisted of the girls being distributed in groups of an adequate value and effort level (most of the times the groups being of a weak and medium force and endurance level, but also with some advanced coordination groups). For space-preserving reasons, only the medium and weak level learning units will be presented in the paper, with all the differentiations resulting from the analysis of the objectives, methods and complexity of the means, effort distribution on series, repetitions, actual work time, value of the breaks and the like.

The Endurance learning unit projection on 8th graders
No. of lessons: **9**; Value group: **weak**; Period: *October – November 2007*

| Nr. crt. | Ob. Ref. | Main Goals | Content details | Learning activities examples | Exposure | Resources | Assess. |
|----------|---------------------------------|---|--|--|----------|---------------------------------|-----------------|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. | 1,3 2,1 3.1 3.3 4.2 | General endurance development | Aerobic endurance | – low running pace, constant effort intensity, programmed duration (6' – 8') | 8 – 10' | Handball field | Predictive |
| 2. | idem | | | Idem L ₁ | idem | | Current |
| 3. | idem | Coordinated endurance development | Handball technical structure Local muscular endurance | – in pairs, face to face, on the length of the Hb field (20 m distance), center dribbling, ground level pass and back to the initial position, the same thing being applied for the goalkeeper (2 x 3'; p – 2' – active, breathing moves) | idem | Balls, marks and Handball field | Current |
| 4. | idem | Adapting the moving speed to the level of the v. group | Mixed and aerobic end. Varied paces | – Platoon running on the entire Hb. Field and on one length of the acceleration Hb. field – 3 / 4 (2 x 2'); pause (2' – 3') – active | Idem | Marked Handball field | Idem |
| 5. | idem | | | Idem L ₃ | idem | | |
| 6. | idem | Maintaining control over the movements | Force endurance Applicative structure | – 20 semi-genuflexions, 10 jumps from standing position while holding a ball, crouching under obstacles, transporting a medical ball to the side of the Hb. field, 10 push-ups and relay race | idem | Obstacle, medical ball | Idem |
| 7. | idem | Movement coordination during fatigue | Precision and endurance coordination | – string jumps, avoiding mistakes and exercising longer periods of time (3 x 1,5'), p – 1,5' – 2' – active | idem | Strings | Idem |
| 8. | idem | | | Idem L ₆ | | | Idem |
| 9. | idem | Forming the objective self-assessment capacity concerning the effort capacity | Long term endurance Contest | – in pairs, face to face – each positioned in a circle tangent to the exterior of the Hb. field, simultaneous running towards the partner, avoiding his/her circle, going back, avoiding own circle etc. 8 filed lengths are covered (back and forth). The winner is the first to reach the end of the track in his/her own circle | idem | Markings, Hb. field | Self-assessment |

The Endurance learning unit projection on 8th graders
No. of lessons: **9**; Value group: **weak**; Period: *October – November 2007*

| Nr. crt. | Ob. Ref. | Main Goals | Content details | Learning activities examples | Exposure | Resources | Assess. |
|----------|---------------------------------|--|---|--|----------|------------------------------------|-----------------|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. | 1,3 2,1 3.1 3.3 4.2 | Developing intense effort endurance | Mixed, lactacid and anaerobic exposure | – 3 x 400 m training, in an alternative and sub-maximal pacing p – 1'30" – 2' | 8 – 10' | Hb. field | Predictive |
| 2. | idem | | | Idem L ₁ | idem | | Current |
| 3. | idem | Maintaining precision and coordination during intense efforts | Hb. technical structure | – in pairs – face to face – on the Hb field's length (the lateral side – 20 m distance), up-tempo dribbling to the center and passing the ball while jumping, followed by a backwards walk to the initial position. The partner carries out the same tasks (2 x 3'; p – 1,5'–2' – active) | idem | Hb balls and field, markings | Idem |
| 4. | idem | Muscle stability when exposed to great effort | Lactacid, mixed and anaerobic endurance | – Value group organized running in a sustained pace 2/4 – 3/4, then the last member of the platoon accelerates and the next one follows him etc. (2 x 3'); pause 2' – active | idem | Hb. field Markings | Idem |
| 5. | idem | | | Idem L ₃ | idem | | Idem |
| 6. | idem | Ensuring high performance of executed actions | Strength endurance. Applicative track | – 30 genuflections, 15 jumps holding the knees close to the chest, crouching under two obstacles, carrying two medical balls with one arm, 20 successive push-ups with hand clapping and switching from one leg to the other and relay race | idem | Medical balls, obstacles, markings | Idem |
| 7. | idem | Maintaining high paces while exercising | Coordinated endurance (with regard to other motor skills) | – varied and alternated methods of string jumping, maintaining the frequency of the movements, without affection the execution method: (3 x 2,5') p – 45" – active | idem | Strings | idem |
| 8. | idem | | | Idem L ₆ | idem | | idem |
| 9. | idem | Developing the endurance self-assessment skill and adaptation to great efforts | High intensity effort endurance | – in pairs, face to face – each positioned in a circle tangent to the exterior of the Hb. field, simultaneous running towards the partner, avoiding his/her circle, going back, avoiding own circle etc. 12 tracks (the width of the field) are covered (back and forth) at a high pace. The winner is the first to reach the end of the track in his/her own circle | idem | Hb. field, markings | Self-assessment |

Conclusions:

The lactacid capacity's development may lead to serious imbalances in the human body, this type of effort being better rationalized towards the end of puberty. In spite of all these side effects, the endurance assessment tests (800-1000m) directly aim at the highest intensity in the shortest period of time, thus the training that only involves the development of the aerobic capacity proves useless when trying to achieve a superior result, as the age and physiologic potential of the students neutralize any prolonged intense effort.

Regarding development of the specific resistance (working on the muscle groups that are generally used in various sports), it must be mentioned that the repetition of specific structures resulting in the effort of adaptation by exposing the tissues to lactic acid becomes extremely necessary. The progressive use of the different types of efforts is only made after the aerobic capacity has evolved sufficiently, as aerobic efforts, combined with varied-intensity efforts favor the body's healing capacity.

The training plan for those of low effort levels consisted of effort/rest combinations involving longer or shorter breaks, avoiding the exposure to prolonged effort, not easily tolerated by the body. In this case, the systems employed are as simple as possible, in order to be easily executed, and the effort parameters are a lot more reduced than those corresponding to advanced or medium level groups, the purpose being reduced to carrying out the given tasks and building up confidence in each of the subject's potential. For the medium level students and better yet, for the top students, the selected means are somewhat more complex and involve the combinations of already known structures, tempo and content-diverse elements, based on the approached motor skill. The selection and planning of the aforementioned means is very important, as it is crucial for the success of the instruction. As the motor background is undoubtedly improved, the 8th grade motor abilities education themes are to be diverse, in order to prevent the body getting used to the stimuli of the same kind. From this very reason, the action systems are presented in 2-3 lessons of a single learning cycle and then replaced by others with a mandatory dominant influence on the energetic systems that accomplish the same tasks.

Nonetheless, using such a varied array of actions also implies having a good execution technique, in order to avoid any possible accident.

With regard to the *endurance*, a single lesson cycle was allotted for the first semester, being correlated with the coordination and games themes. The approached manifestation manners are the cardio-respiratory, aerobic, mixed and sport-specific endurance etc. Concerning the endurance run test, the aim of the learning cycle shall also be directed towards the second

semester, where the results of the test shall be recorded at the end of each month. Moreover, if the low-end groups are more focused on aerobic endurance, and the medium on mixed-endurance, the high-end groups are focused on the lactacid anaerobic endurance.

The proposed means aim not to bore the students out, improving their emotional state and interest, their concentration being most of the time the main factor in neutralizing any form of fatigue, thus being able to withstand considerable effort exposures (steady, variable-pace running and even varied interval running; repeated technical and tactic structures with short breaks and increased intensities, applied structures, string jumping, working in pairs etc.)

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Méthodologie de projection de l'unité d'apprentissage „Resistance” au niveau des groupes de niveau bas et avancé (VIIIe classe)

Résumé: La planification des efforts physiques dans différentes étapes (systèmes de leçons) avec la modification permanente des principaux paramètres de l'effort physique, conduira à des sollicitations différentes de l'organisme et l'obtention de l'adaptation de longue durée.

Mots-clés: système de leçons, traitement différencié, accessibilité, variété des stimuli et des méthodes, effort physique

Metodologia proiectării unității de învățare „Rezistența” la nivelul grupelor valorice de nivel scăzut și avansat (clasa a VIII-a)

Rezumat: Planificarea eforturilor fizice pe diferite etape (sisteme de lecții), cu modificarea permanentă a principalilor parametri ai efortului fizic, va conduce la solicitări variate asupra organismului, concretizate în adaptări succesive la stimuli diferiți ca grad de solicitare, instalându-se adaptarea de lungă durată, existând în acest caz o activitate cumulată a funcțiilor și sistemelor organismului (efect sinergetic), aspect ce permite învingerea sarcinilor programate.

Cuvinte cheie: sistem de lecții, tratare diferențiată, accesibilitate, varietatea stimulilor și metodelor, efort fizic

THE COORDINATIVE CAPACITY LEARNING UNIT PROJECTION METHODOLOGY IN DEALING WITH ADVANCED VALUE GROUPS METHOD (8TH GRADE)

Mocanu George, Junior Lecturer
Dunarea de Jos" University of Galati
The Faculty of Physical Education and Sports

Abstract: *The instructive-educational process aiming at the development of the human potential during puberty must focus on the fact that a group is usually comprised of various types of different individuals, TAKING INTO ACCOUNT gender, training, motor skills, effort capacity, abilities, intelligence, interests, attitudes, motivations, education or value-related difference. As the differences discovered between the assessing experiment will undoubtedly increase in the next phase, working in value groups when approaching motor abilities themes becomes the only way of reducing the aforementioned differences. The experimental curriculum is comprised of various coordination and force-related themes, due to the very weak level found at the initial tests and also because of the fact that the majority of other options are closely related to them, thus influencing the quality of the physical exercises.*

Key words: *lesson plan, differentiated approach, accessibility, movement precision and combination, coordinative capacity*

Introduction: Along with the force, the coordinative capacity (adroitness) is considered to be the highest interdependent skill of all, an aspect justified by the fact that every move implies a certain muscular contraction intensification, but also a degree of precision, stability and effectiveness. During the lower-secondary education, it can be affected by the rapid growth around the waist and weight gaining, correlated with an uneven increase in strength. Moreover, an underdeveloped inhibition results in negative effects on the movement control, this being reflected in the reduction of the coordinative capacity specific parameters. Once the body reaches puberty, the excitation-inhibition quota evens itself, even though the

excitation remains dominant. Consequently, the movement precision, execution technique and effectiveness improve significantly, the only possible issues being related to an eventual insufficiently consolidated skill technique, to a high energetic consumption and to much too strong muscular contractions.

The research hypothesis and the experiment contents are based on the assumption according to which the development of motor skills during the lower-secondary education based on a differentiated approach of the physical effort will lead to an improvement of the physical training level. This paper only presents the learning units corresponding to advanced value groups and the conclusions drawn after applying them.

The Coordination learning unit projection on 8th graders

Lessons no.: **10**; Theme cycle: **1**; Value level group: **advanced**; period: *October - November 2007*

| Nr. crt. | Ob. Ref. | Main Goals | Content details | Learning activities examples | Exposure | Resources | Assess. |
|----------|---|--|---|--|----------|--|------------|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. | 1.1 1.3 2.1 3.1 3.3 4.1 4.2 | Improving movements in maximal intensity conditions Developing the structures applied in various difficult situations | Combining varied movements Coordination and rhythm Action precision, positioning system Contests | <ul style="list-style-type: none"> Running and jumping over obstacles of various heights (40 – 30 – 50 – 20 – 60 cm), combining jumping methods, lifting the legs in the air, landing in different positions at 180 – 360° etc. (2 x) In line with the obstacle, jumping over it and turning back by jumping backwards (both the jump and the landing are made on both feet) (8-10 x) Running along the gymnastic bench, string jumps, turning in circles and grabbing objects etc. Each with his/her own ball, jumping high holding the ball up, then throwing the ball vertically, advancing by rolling over and retrieving the ball before it reaches the ground (3 – 4 x) Contest: in pairs, face to face, one holding a ball and the other one a string. One member will jump the string while head-hitting the ball thrown by the partner | 7' – 8' | Obstacles Gymnastic Benches Handballs Strings | Predictive |
| 2. | idem | idem | idem | Idem L ₁ | idem | idem | Current |
| 3. | idem | idem | idem | <ul style="list-style-type: none"> Sitting, rotating the arms frontally, then lying low, getting up on the tip of the toes of one foot, then laying down the arms (the frequency of the exercises increases) The cane kept vertically on the ground, laterally, releasing it and quickly turning at 180° grabbing it again before reaching the ground (7-10 x) Applied track: separately moving 4 handball balls from one circle to another, running between obstacles while changing directions, pushing the ball either by hand or foot (2 balls simultaneously), throwing them at a fixed or mobile target, alternated jumps from the gymnastic bench, sitting down and crouching backwards holding a medical ball with the ankles | idem | Gymnastic cane Handballs Poles Bench | Current |
| 4. | idem | idem | idem | Idem L ₃ | idem | idem | Idem |
| 5. | idem | | Technical | – In pairs, face to face, at a 10-12m distance from one another, one with a | idem | Handballs | Idem |

| Nr. crt. | Ob. Ref. | Main Goals | Content details | Learning activities examples | Exposure | Resources | Assess. |
|----------|----------|--|---|--|----------|---|---------|
| | | Self-control over the quality of the movements Applying the method in consolidate d elements contests | methods applied in uneven conditions Racings | ball, dribbling with the maladroito hand, doubled by direction changes and pass while running, sending the ball in different trajectories (10 – 15 repetitions / student). To be carried out at a fast pace. – In pairs, face to face, passing the handball, while hitting the football (1') – String jumps with the legs crossed, then alternatively switching both the legs and the jumping manner (1') – A small ball is placed on a tennis bat (other elements can also be introduced – obstacles, the vertical posture etc.) – 2 handballs and a bat, one ball in the right arm and the other one in the left arm | | Footballs Strings Tennis bats Obstacles Gymnastic benches | |
| 6. | idem | idem | idem | Idem L ₅ | idem | idem | Idem |
| 7. | idem | High output during increased difficulty conditions Improving own creativity (developing personal ideas) | Combining, selecting and transforming the moves Complex contests | – In pairs, each with a ball, moving simultaneously in the same direction, rolling the ball with the back of the hand, while clapping with the other hand – Each partner with two balls, facing the wall, dropping the balls then retrieving them while switching them between partners – The group is divided in two teams, facing one another and at a 10 m distance. A medical ball or basketball is rolled on the line between the teams. The students are given handballs and told not to hot the ball moving, but sent it as far on the other side as possible. – In line, each pair facing the other, at a 7-8-10 m distance, rolling a circle on the separating line while the pairs try to throw a basketball through the mobile targets | idem | Handballs Medical balls Markings Circles | idem |
| 8. | idem | idem | idem | Idem L ₇ | idem | idem | Idem |
| 9. | idem | idem | idem | – Ball passing between three team members and self-decided manner of ending the training – In line, one by one, the last one holding the handball, dribbling the ball among them, the first one sends the ball to the last one during repeated executions (the rapidity of the movements is to be insisted on) – Ball throwing contest form a 7 m distance (ending in the corner of choice) – A group divided in two teams, passing the ball on a small field, with certain restrictions (no dribbling) and only 3 running steps. The team that manages to keep the ball most wins (each student is followed and follows himself the partner he/she decides could improve the score) | idem | Hb. field, handballs, markings | Idem |
| 10. | idem | idem | idem | Idem L ₉ | idem | idem | Idem |

Conclusions:

The coordinative capacity's development depends on the amount and quality of the motor skills acquired, on the maturity of the C.N.S., a great number of repetitions ensuring the correct feed-back to the proprioceptors in the muscles, thus contributing to the effectiveness of the move. The C.N.S.'s adaptability is many times better in the case of a 6-12 year old child than the one of an adult, thus contributing to new moves being learned more rapidly and creatively combining them with the already-known ones. Most authors consider that the coordinative capacity's elements may be trained at their best between 4 and 7 years of age due to the children's youthful curiosity, a period followed by the one marked by ages between 7 and 12 and then by the period marked by ages over 14. There is only one critical moment the specialists also take into consideration – children of 12-13 years of age.

The *coordinative capacity's* planning was also based on two separate systems, one for each semester as to support the taught physical education principles (the sports game and aerobic gymnastics). The first system is made of 10 lessons, which follow the improvement of speed and specific adroitness, move precision, move combination and transformation, developing a rhythm sense, ambidexterity, the possibility of applying the method in a varied context etc.. The allotted time is short (7'-8'), leaving the team the possibility of concentrating on the bilateral deals of the game and endurance training. The employed manners may vary a lot, this going from simple moves combinations (jumps with different rotation angles, going from one place to another, running or side to side walking, avoiding obstacles, static and dynamic equilibrium exercises), to handball specific structures (passing the ball on different trajectories and at varied speeds, while standing or running, combined with additional moves, dribbling with the adroit hand, rhythm variations, avoiding obstacles, including varied combinations, ball throwing towards the goalpost, relay racing, themed contest and other additional tasks). It is to be noted that the degree of complexity must be adapted to the level of the individuals, and that the stimuli might be better perceived.

The second lesson plan also has 10 allotted hours and the same time period (7'-8'), yet the activities are carried out in accordance with aerobic gymnastics themes. The coordinative capacity's main elements of interest aim at the body's orientation, segmented coordination and the typical precision proper to gymnastics, which require, a part from all the above, a good self-control joined with creative and rational move combinations.

The employed triggers meet all these demands (alternatives following different trajectories and procedures, jumping on, over and from various obstacles while rotating the body, including additional moves of the superior limbs and landings either on one foot or laying low etc.; running and changing direction and restoration to the initial position, movement structures carried out on the gymnastic bench, ball, circles and cane-related exercises and also varied structures based on well-known gymnastics elements: rolling over back and forth from a laying down position, strength and equilibrium elements etc.). All these means have been selected and combined in applicative tracks and relays, therefore they increase the dynamics and student involvement.

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Méthodologie de projection de l'unité d'apprentissage «Capacité coordinatrice» au niveau du groupe avancé (8^e classe)

Résumé: *Le développement du procès instructif – éducatif dans la période pubertaire doit prendre en considération les différences majeures qui apparaissent au niveau individuel. La constitution et le travail par groupes sont indiqués pour la réduction de ces différences. Dans le programme expérimental nous avons entrepris beaucoup de thèmes de coordination et de force parce que toutes les autres aptitudes y sont étroitement liées et conditionnent la qualité des mouvements effectués.*

Mots – clés: *systèmes de leçons, traitement différentiel, accessibilité, précision et combinaison des mouvements, capacité coordinatrice*

Metodologia proiectării unității de învățare „Capacitatea coordinativă” la nivelul grupei valorice de nivel avansat (clasa a VIII-a)

Rezumat: *Desfășurarea procesului instructiv-educativ în vederea dezvoltării și valorificării potențialului uman în perioada pubertară, trebuie să plece de la ideea că într-un colectiv apar diferențieri majore la nivel individual, datorate particularităților de vârstă, sex, pregătire și experiență motrică, capacitate de efort, aptitudini, inteligență, interese, atitudini, motivații, temperament, educație, valori, etc. Cum decalajele*

dintre elevi semnalate în timpul experimentului constatativ vor fi cu siguranță amplificate în etapa următoare, constituirea și lucrul pe grupe valorice la nivelul temelor din aptitudinile motrice este indicată ca fiind singura variantă de reducere a acestor diferențe. În programa experimentală am alocat un număr mare de teme din coordonare și forță datorită nivelului slab constatat în urma testărilor inițiale și pentru că

majoritatea celorlalte aptitudini sunt în strânsă legătură cu ele, condiționând calitatea mișcărilor efectuate.

Cuvinte cheie: sistem de lecții, tratare diferențiată, accesibilitate, precizia și combinarea mișcărilor, capacitate coordinativă.

DETERMINING THE OPTIMAL PERIOD IN DEVELOPING THE COORDINATIVE CAPACITIES IN MALE ELEMENTARY SCHOOL PUPILS

Petronel Moiescu

Summary: *So far the field of physical education theory and practice has gathered a rich experimental material attesting huge possibilities to develop the motor capacities, especially the coordinative ones in elementary school pupils. All the experts in the field of sports and physical education agree that exercises based on coordination have to be introduced at ages prior to adolescence as adolescence itself is not the most suitable time to start elements of coordination training. At the same time, the influence of coordination capacities on the general motor skill of young elementary pupils has not been studied enough.*

Key words: *coordinative capacities, elementary school, boys.*

The science of physical education is a part of pedagogy with its general and specific links, determining the content and structural forms of the physical education as a pedagogical process, organically included in the general system of human formation.

By applying the appropriate technologies the objectives of general education may be attained, whereby physical education is treated as a unitary process of developing and improving children in point of motor skills, stimulating their intellectual activity, influencing their affective processes, developing their interpersonal relationships, dynamising their mental processes: motor memory, tactical thinking, kinaesthetic sensations, forming skills and abilities in daily activity.

In order to assess coordinative capacities, there is no unique method, criterion or test. This is due to the complex structure of coordinative capacities and besides, they manifest themselves in combination to other motor skills. That is why the assessment of the development level of coordinative capacities is usually performed by sets of tests, which have to be applied in certain conditions. Here are the tests selected to evince the various forms of manifestation for coordinative capacities.

The motor test was performed on a sample of 255 boys aged between 7 and 11, out of whom 64 pupils aged 7 and 8, 63 boys aged 8 and 9, 63 boys aged 9 and 10, and 65 boys aged 10 and 11. In order to test *coordinative capacities* 11 motor tests were applied, allowing the assessment of the manifestation and dynamics of the structural components of the capacities under study.

A. Determining the capacity of assessing and regulating the dynamic and spatial-temporal parameters of the motor act:

1) *leaps to the mark;*

2) *ball throw to the target with the back turned to it.*

B. Determining the capacity of maintaining the balance:

1) *balance on the gym board;*

2) *dynamic balance test;*

3) *balance in walking backwards.*

C. Determining the rhythm sense:

1) *sprint in a given rhythm.*

D. Determining the spatial orientation capacity:

1) *the square test;*

2) *the test for distance assessment.*

E. Determining the movement coordination capacity:

- 1) *the commute;*
- 2) *hexagonal obstacle;*
- 3) *the Matorin test.*

All tests aiming at evaluating the level of manifestation of the coordinative capacities are experimentally approved by several authors and are valid at a young age (preschool, elementary school, etc.). In this experiment, as a result of testing the subjects, the statistic indices were calculated regarding the arithmetic average, standard deviation, variability coefficient and average error, shown in the table below.

In the case of the test called "*leaping at the mark*" progress is observed in the continuously increasing evolution, with various increase rhythms. The boys' performance register an average of 12.23 cm in the first grade and an average of 5.39 cm in the 4th grade, hence increasing by 107.69%. At the same time, the progress in absolute value during the 4 years of study is 6.84 cm. The highest progress in boys is achieved in the 3rd and 4th grades. Thus, the absolute

value of the progress made is 3.68 cm and 2.21 cm respectively.

Similarly, in the second test, viz. "*ball throw to the target with the back turned to it*", it can be noticed that the performance registered a progress index of 44.65% during the 4 years of the study. In absolute value, the best performance is achieved in the 2nd and 3rd grades when the group average improves by 0.94 points, and 0.56 points respectively, viz. an increase of 21.9%, for the 2nd grade and 10.61% for the 3rd grade.

The test "*balance on the gym board*" proves that the group average registers an upward evolution with age. Thus, for a group average of 26.9 sec at the beginning of elementary school, the end of the elementary school reaches an average of 15.39, which represents an improvement of 42.78%, and an average improvement by 11.51 sec. Respectively. Notable performances appear in the 4th grade when the group average improves by 26.05%, i.e. 5.42 sec in absolute value.

| Nr. | Coordinative Capacities | cls. | nr. sub. | \bar{x} | δ | cv | $\pm m$ |
|-----|---|------|----------|-----------|----------|-------|---------|
| 1 | Leaps to the mark | 1 | 64 | 12,23 | 4,23 | 34,57 | 0,53 |
| | | 2 | 63 | 11,28 | 3,24 | 28,74 | 0,41 |
| | | 3 | 63 | 7,60 | 1,55 | 20,43 | 0,20 |
| | | 4 | 65 | 5,39 | 1,10 | 20,31 | 0,14 |
| 2 | Ball throw to the target with the back turned to it | 1 | 64 | 4,30 | 1,98 | 46,11 | 0,25 |
| | | 2 | 63 | 5,24 | 2,33 | 44,54 | 0,29 |
| | | 3 | 63 | 5,79 | 2,24 | 38,61 | 0,28 |
| | | 4 | 65 | 6,22 | 1,96 | 31,48 | 0,24 |
| 3 | Balance on the gym board | 1 | 64 | 26,90 | 3,65 | 13,57 | 0,46 |
| | | 2 | 63 | 23,88 | 3,29 | 13,78 | 0,41 |
| | | 3 | 63 | 20,81 | 2,62 | 12,58 | 0,33 |
| | | 4 | 65 | 15,39 | 1,44 | 9,39 | 0,18 |
| 4 | Dynamic balance test | 1 | 64 | 64,38 | 17,12 | 26,60 | 2,14 |
| | | 2 | 63 | 58,71 | 11,54 | 19,65 | 1,45 |
| | | 3 | 63 | 53,68 | 7,68 | 14,32 | 0,97 |
| | | 4 | 65 | 46,88 | 4,61 | 9,84 | 0,57 |
| 5 | Balance in walking backwards | 1 | 64 | 33,19 | 6,22 | 18,73 | 0,78 |
| | | 2 | 63 | 38,43 | 5,07 | 13,20 | 0,64 |
| | | 3 | 63 | 42,84 | 3,94 | 9,21 | 0,50 |
| | | 4 | 65 | 47,08 | 3,00 | 6,38 | 0,37 |
| 6 | Sprint in a given rhythm | 1 | 64 | 1,64 | 0,36 | 21,92 | 0,04 |
| | | 2 | 63 | 1,41 | 0,49 | 34,46 | 0,06 |
| | | 3 | 63 | 1,37 | 0,44 | 32,20 | 0,06 |
| | | 4 | 65 | 0,86 | 0,38 | 43,48 | 0,05 |
| 7 | The square test | 1 | 64 | 14,68 | 2,37 | 16,16 | 0,30 |
| | | 2 | 63 | 13,67 | 2,32 | 17,01 | 0,29 |
| | | 3 | 63 | 10,65 | 1,25 | 11,72 | 0,16 |
| | | 4 | 65 | 9,44 | 1,23 | 12,99 | 0,15 |
| 8 | The test for distance assessment | 1 | 64 | 216,45 | 74,43 | 34,38 | 9,30 |
| | | 2 | 63 | 180,30 | 49,06 | 27,21 | 6,18 |
| | | 3 | 63 | 136,52 | 32,86 | 24,07 | 4,14 |

| | | | | | | | |
|----|--------------------|---|----|--------|-------|-------|------|
| | | 4 | 65 | 100,97 | 22,78 | 22,56 | 2,83 |
| 9 | The commute | 1 | 64 | 16,22 | 1,76 | 10,84 | 0,22 |
| | | 2 | 63 | 15,56 | 1,55 | 9,97 | 0,20 |
| | | 3 | 63 | 14,35 | 1,24 | 8,63 | 0,16 |
| | | 4 | 65 | 13,85 | 1,01 | 7,28 | 0,13 |
| 10 | Hexagonal obstacle | 1 | 64 | 46,07 | 6,65 | 14,44 | 0,83 |
| | | 2 | 63 | 34,32 | 3,31 | 9,64 | 0,42 |
| | | 3 | 63 | 29,00 | 2,47 | 8,52 | 0,31 |
| | | 4 | 65 | 25,08 | 1,75 | 7,00 | 0,22 |
| 11 | The Matorin test | 1 | 64 | 257,81 | 28,31 | 10,98 | 3,54 |
| | | 2 | 63 | 278,57 | 30,53 | 10,96 | 3,85 |
| | | 3 | 63 | 290,79 | 18,95 | 6,52 | 2,39 |
| | | 4 | 65 | 300,77 | 17,79 | 5,92 | 2,21 |

In the test "dynamic balance", the evolution of the group average during the 4 years of the study indicates a total increase of 17.5 cm, i.e. 27.18 %. The highest increase takes place in the 4th grade when the group average improves by 12.68 % as compared to the average in the 3rd grade, viz. 6.81 cm in absolute value.

In the test "balance in walking backwards" the evolution of the group average during the 4 years is uniformly slow where the increase is between 4.24 and 5.24 points per year. The highest increase is seen in the 2nd grade when the group average improves by 5.24 cm as compared to the 1st grade. The increase is 15.78%. during the 4 years of study the boys' group average registers an improvement of 41.84%, i.e. 13.89 points in absolute value.

In the case "sprint in a given rhythm", the subjects tested achieve a total progress of 0.78 sec in absolute value, i.e. 47.38% respectively. The lowest progress made is achieved in the 3rd grade, i.e. 0.04 sec, and the highest in the 4th grade when the group average reached 36.92%, i.e. 0.51 sec in absolute value.

In the test "the square test", the progress achieved during the 4 years of study is of 5.24 sec. in absolute value. From a value of 14.68 sec in the first grade, the 4th grade reaches a group average of 9.44 sec. So, the increase is 35.7%. The highest progress in the group average is obtained in the 4th grade when the increase is 22.07 % as compared to the previous grade, i.e. an absolute increase of 3.02 sec.

"The test for distance assessment" shows that from a performance of 216.41 cm in the first grade, the increase goes up to 100.97 cm, i.e. an improvement in performance of 115.48 cm, i.e. 53.35%. The best performance is recorded in the 4th grade when the group average improves by 26.04% as compared to the previous one, and in the 3rd grade when the improvement in the group average reaches 24.28%. The increase in absolute value is 43.78 cm and 35.55 cm respectively.

The subjects' evolution in the "commute" test registers an upward evolution with age. The progress index during the 4 years of study is 14.61%. In absolute value, the progress made is 2.37 seconds. The highest increase occurs in the 3rd grade when the progress achieved in comparison to the 2nd grade average improves by 7.78%, i.e. 1.21 seconds in absolute value.

In the test "hexagonal obstacle" the progress in absolute value is 20.99 sec, viz. 45.56% during the 4 years. The most substantial group increases registered in the 2nd grade when the progress is in absolute value of 11.74 sec, which represents 25.49%.

For the "Matorin" test the progress made during the 4 years of the study amounts to 42.96 degrees, i.e. 16.66%. The highest progress are made in the 2nd and 3rd grade when the absolute value increases by 20.76 degrees, and 12.22 degrees respectively. These values amount to 8.05% and 4.39%.

Conclusions

As a result, in point of coordinative capacities, for all the 5 forms of manifestation an upward evolution can be noticed with age in male subjects. The experiment performed confirms the opinions of all experts in the field that young school pupils go through a favourable period regarding the development of coordinative capacities, as they are in progressive dynamics, which supports the idea that these indices are prone to improvement. They are in continuous progress for all subjects, but sensitive periods differ according to age. The most fertile periods were set for the 2nd and 4th grades, but taking into account that subject homogeneity increases for both towards the end of the elementary school, it is held that the 4th grade is the most favourable for the development of coordinative capacities.

In conclusion, it may be stated that on the basis of the measurements performed the highest level of manifestation for the coordinative capacities is reached in the 4th grade, hence this grade is the most

favourable for the development of coordinative capacities.

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Détermination de la période optimale dans le développement des capacités coordinatives chez les élèves de sexe masculin dans l'enseignement primaire
Résumé: Jusqu'aujourd'hui dans le domaine de l'éducation physique on a accumulé un riche matériau

expérimental qui atteste de grandes possibilités de développement des capacités motriques, surtout coordinatives, chez les élèves des classes primaires. Tous les spécialistes du domaine sont d'accord sur le fait que les exercices basés sur coordination doivent être introduits à des âges antérieurs à l'adolescence, car celle-ci n'est pas un moment propice pour le commencement des éléments d'entraînement de la coordination. En même temps, l'influence des capacités de coordination sur la motricité générale des élèves du cycle primaire n'a pas été suffisamment étudiée.
Mots clé: capacités coordinatives, cycle primaire d'enseignement, garçons

Determinarea perioadei optime în dezvoltarea capacităților coordinative a elevilor de sex feminin din ciclul primar de învățământ

Rezumat: Până în prezent în domeniul teoriei și metodicii educației fizice s-a acumulat un bogat material experimental care atestă mari posibilități de dezvoltare a capacităților motrice și în special a celor coordinative, la elevii din clasele primare. Toți specialiștii domeniului educației fizice și sportului sunt de acord că exercițiile bazate pe coordonare trebuie introduse la vârste anterioare adolescenței deoarece adolescența nu e un moment potrivit pentru începerea elementelor de antrenare a coordonării. Totodată, influența capacităților de coordonare asupra motricității generale a elevilor de vârstă școlară mică nu a fost studiată suficient.

Cuvinte cheie: capacitate coordinativă, ciclul primar, băieți.

DETERMINING THE OPTIMAL PERIOD IN DEVELOPING THE COORDINATIVE CAPACITIES IN FEMALE ELEMENTARY SCHOOL PUPILS

Petronel Moisescu

Summary: So far the field of physical education theory and practice has gathered a rich experimental material attesting huge possibilities to develop the motor capacities, especially the coordinative ones in elementary school pupils. All the experts in the field of sports and physical education agree that exercises based on coordination have to be introduced at ages prior to adolescence as adolescence itself is not the most suitable time to start elements of coordination training. At the same time, the influence of coordination capacities on the general motor skill of young elementary pupils has not been studied enough.

Key words: coordinative capacities, elementary school, girl.

The science of physical education is a part of pedagogy with its general and specific links, determining the content and structural forms of the physical education as a pedagogical process, organically included in the general system of human formation.

By applying the appropriate technologies the objectives of general education may be attained, whereby physical education is treated as a unitary process of developing and improving children in point of motor skills, stimulating their intellectual activity, influencing their affective processes, developing their interpersonal relationships, dynamising their mental processes: motor memory, tactical thinking, kinaesthetic sensations, forming skills and abilities in daily activity.

In order to assess coordinative capacities, there is no unique method, criterion or test. This is due to the complex structure of coordinative capacities and besides, they manifest themselves in combination to other motor skills. That is why the assessment of the development level of coordinative capacities is usually performed by sets of tests, which have to be applied in certain conditions. Here are the tests selected to evince the various forms of manifestation for coordinative capacities.

The motor test was performed on a sample of 261 girls aged between 7 and 11, out of whom 65 girls aged 7 and 8, 66 girls aged 8 and 9, 65 girls aged 9 and 10 and 65 girls aged 10 and 11. In order to test *coordinative capacities* 11 motor tests were applied, allowing the assessment of the manifestation and dynamics of the structural components of the capacities under study.

A. Determining the capacity of assessing and regulating the dynamic and spatial-temporal parameters of the motor act:

- 1) *leaps to the mark;*
- 2) *ball throw to the target with the back turned to it.*

B. Determining the capacity of maintaining the balance:

- 1) *balance on the gym board;*
- 2) *dynamic balance test;*
- 3) *balance in walking backwards.*

C. Determining the rhythm sense:

- 1) *sprint in a given rhythm.*

D. Determining the spatial orientation capacity:

- 1) *the square test;*
- 2) *the test for distance assessment.*

E. Determining the movement coordination capacity:

- 1) *the commute;*
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All tests aiming at evaluating the level of manifestation of the coordinative capacities are experimentally approved by several authors and are valid at a young age (preschool, elementary school, etc.). in this experiment, as a result of testing the subjects, the statistic indices were calculated regarding the arithmetic average, standard deviation, variability coefficient and average error, shown in the table below.

In the test "*leap to the mark*" the performance increased by 57.04%. The group average of 14.27 cm achieved in the 1st grade evolves to 6.13 cm in the 4th grade. The progress in absolute value is 8.14 cm. The highest progress occurs in the 3rd and 4th grades when the group average improves by 3.27 and 2.66 cm respectively, and the progress made is 27.1% in the 3rd grade and 30.27% in the 4th grade.

For the second test, "*ball throw with the back*", the progress index achieved is 39.55%. in absolute value, the progress made is 1.63 points. The highest progress index is noted in the 2nd and 4th grades viz. 16.12%, 10.32% respectively, which in absolute value is represented by an improvement of the previous averages by 0.66 points, and 0.54 points respectively in the 4th grade.

The average evolution in the test "*balance on the gym board*" shows a group average of 28.35sec. in the 1st grade, and in the 4th grade 15.11sec. , which means a performance improvement by 46.7%, i.e. 13,24 sec. in absolute value. The best performance is registered in the 4th grade when the progress is 30.57% which represents 6,65 sec.

For the "*dynamic balance test*" the increase in performance is of 14 cm, i.e. 22.14% as compared to the performance achieved in the 1st grade. The highest increase is noticed in the 3rd grade when the group average increases by 16.12% , i.e. an increase of 9.92 cm out of the 14cm achieved during the 4 years.

| Nr. | Coordinative Capacities | cls. | nr. sub. | \bar{x} | δ | cv | $\pm m$ |
|-----|---|------|----------|-----------|----------|-------|---------|
| 1 | Leaps to the mark | 1 | 65 | 14,27 | 5,91 | 41,40 | 0,73 |
| | | 2 | 66 | 12,06 | 3,71 | 30,76 | 0,46 |
| | | 3 | 65 | 8,79 | 2,28 | 25,90 | 0,28 |
| | | 4 | 65 | 6,13 | 1,17 | 19,09 | 0,15 |
| 2 | Ball throw to the target with the back turned to it | 1 | 65 | 4,12 | 2,07 | 50,09 | 0,26 |
| | | 2 | 66 | 4,79 | 1,97 | 41,21 | 0,24 |
| | | 3 | 65 | 5,22 | 1,75 | 33,64 | 0,22 |

| | | | | | | | |
|----|----------------------------------|---|----|--------|-------|-------|------|
| | | 4 | 65 | 5,75 | 1,76 | 30,57 | 0,22 |
| 3 | Balance on the gym board | 1 | 65 | 28,35 | 4,50 | 15,89 | 0,56 |
| | | 2 | 66 | 25,93 | 3,60 | 13,88 | 0,44 |
| | | 3 | 65 | 21,76 | 3,11 | 14,30 | 0,39 |
| | | 4 | 65 | 15,11 | 1,79 | 11,85 | 0,22 |
| 4 | Dynamic balance test | 1 | 65 | 63,23 | 20,79 | 32,88 | 2,58 |
| | | 2 | 66 | 61,52 | 10,52 | 17,10 | 1,29 |
| | | 3 | 65 | 51,60 | 8,00 | 15,51 | 0,99 |
| | | 4 | 65 | 49,23 | 4,75 | 9,65 | 0,59 |
| 5 | Balance in walking backwards | 1 | 65 | 30,18 | 4,89 | 16,19 | 0,61 |
| | | 2 | 66 | 39,12 | 4,79 | 12,24 | 0,59 |
| | | 3 | 65 | 43,80 | 3,95 | 9,01 | 0,49 |
| | | 4 | 65 | 47,12 | 2,97 | 6,29 | 0,37 |
| 6 | Sprint in a given rhythm | 1 | 65 | 1,88 | 0,40 | 21,10 | 0,05 |
| | | 2 | 66 | 1,72 | 0,27 | 15,87 | 0,03 |
| | | 3 | 65 | 1,38 | 0,36 | 25,80 | 0,04 |
| | | 4 | 65 | 1,03 | 0,33 | 31,71 | 0,04 |
| 7 | The square test | 1 | 65 | 15,12 | 3,00 | 19,84 | 0,37 |
| | | 2 | 66 | 13,70 | 1,99 | 14,51 | 0,24 |
| | | 3 | 65 | 11,54 | 1,44 | 12,44 | 0,18 |
| | | 4 | 65 | 9,94 | 1,32 | 13,29 | 0,16 |
| 8 | The test for distance assessment | 1 | 65 | 205,91 | 62,16 | 30,19 | 7,71 |
| | | 2 | 66 | 181,18 | 53,29 | 29,41 | 6,56 |
| | | 3 | 65 | 136,98 | 37,68 | 27,51 | 4,67 |
| | | 4 | 65 | 106,72 | 28,01 | 26,25 | 3,47 |
| 9 | The commute | 1 | 65 | 17,56 | 1,99 | 11,34 | 0,25 |
| | | 2 | 66 | 15,83 | 1,69 | 10,67 | 0,21 |
| | | 3 | 65 | 15,42 | 1,45 | 9,40 | 0,18 |
| | | 4 | 65 | 14,89 | 1,08 | 7,28 | 0,13 |
| 10 | Hexagonal obstacle | 1 | 65 | 46,61 | 6,85 | 14,70 | 0,85 |
| | | 2 | 66 | 33,99 | 4,20 | 12,37 | 0,52 |
| | | 3 | 65 | 30,38 | 2,79 | 9,19 | 0,35 |
| | | 4 | 65 | 23,57 | 2,10 | 8,89 | 0,26 |
| 11 | The Matorin test | 1 | 65 | 258,46 | 30,48 | 11,79 | 3,78 |
| | | 2 | 66 | 264,39 | 28,13 | 10,64 | 3,46 |
| | | 3 | 65 | 284,31 | 17,41 | 6,12 | 2,16 |
| | | 4 | 65 | 299,69 | 15,00 | 5,00 | 1,86 |

The evolution of data registered in the test "*balance in backward walking*" shows a huge increase in performance in the 2nd grade, after which the increase becomes moderate. The best performance is achieved in the 2nd grade when the group average improves in absolute value by 8.94 points as compared to the 1st grade. This progress amounts to 29.61% out of the progress of 56.12 made in the 4 years.

In the test "*sprint in a given rhythm*" the highest increases of the group average are seen in the 3rd and 4th grades when the absolute values are 0.34 sec for the 3rd grade, and 0.35 sec for the 4th grade, out of a total progress of 0.85 sec, along the 4 years of study. The increases during the two grades are 19.48% and 25.56% respectively.

In the "*square test*", a performance improvement is registered from a value of 15.12 sec in the 1st grade to 9.94 sec in the 4th grade. In absolute value, the progress is 5.18 sec, viz. 34.25%. The most relevant improvements occur in the 3rd and 4th grades when the cumulated progress is 2.15 sec and 1.6 sec. respectively. The increases are therefore of 15.71% and 13.87% respectively.

The *distance assessment test* shows an increase from a group average of 205.91cm in the 1st grade to an average of 106.72 cm in the 4th grade. In absolute value this increase is of 99.18 cm i.e. 48.17%. The highest increases as compared to the previous grades are recorded in the 3rd and 4th grades when the progress made is 44.2 cm in the 3rd grade and 30.26 cm

in the 4th grade. These increases represent 24.39% and 22.09%.

In the "commute" test, the index of the progress made is 15.22% during the 4 years of study. In absolute value, the girls' progress is 2.67 seconds. The highest progress index for girls is obtained in the 2nd grade, when out of the total of 2.67 seconds, they achieve an improvement of the previous average by 1.76, viz. an increase of 9.85%.

In the "hexagonal obstacle" test, the group average of 46.61 sec in the 1st grade reaches a value of 23.57 sec, viz. a progress of 49.43%, which means in absolute value a performance improvement of 23.04 sec. the highest increases in the average occur in the 2nd and 4th grades when the absolute values of the increase are 12.62 sec and 6.81sec respectively, viz. 27.08 % in the 2nd grade and 22.42 in the 4th grade.

In the case of the Matorin test, during the 4 years of the study the group average progress is 41.23 degrees in absolute value as compared to the previous grades, the 3rd grade (19.91 degrees) and the 4th grade (15.38 degrees). These values are therefore 7.53% and 5.41%.

Conclusions

As a result, in point of coordinative capacities, for all the 5 forms of manifestation an upward evolution can be noticed with age in male subjects. The experiment performed confirms the opinions of all experts in the field that young school pupils go through a favourable period regarding the development of coordinative capacities, as they are in progressive dynamics, which supports the idea that these indices are prone to improvement. They are in continuous progress for all subjects, but sensitive periods differ according to age. The most fertile periods were set for the 2nd and 4th grades, but taking into account that subject homogeneity increases for both towards the end of the elementary school, it is held that the 4th grade is the most favourable for the development of coordinative capacities.

In conclusion, it may be stated that on the basis of the measurements performed the highest level of manifestation for the coordinative capacities is reached in the 4th grade, hence this grade is the most favourable for the development of coordinative capacities.

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Détermination de la période optimale dans le développement des capacités coordinatives chez les élèves de sexe féminin dans l'enseignement primaire

Résumé: Jusqu'aujourd'hui dans le domaine de l'éducation physique on a accumulé un riche matériel expérimental qui atteste de grandes possibilités de développement des capacités motrices, surtout coordinatives, chez les élèves des classes primaires. Tous les spécialistes du domaine sont d'accord sur le fait que les exercices basés sur coordination doivent être introduits à des âges antérieurs à l'adolescence, car celle-ci n'est pas un moment propice pour le commencement des éléments d'entraînement de la coordination. En même temps, l'influence des capacités de coordination sur la motricité générale des élèves du cycle primaire n'a pas été suffisamment étudiée.

Mots clé: capacités coordinatives, cycle primaire d'enseignement, filles.

Determinarea perioadei optime în dezvoltarea capacităților coordinative a elevilor de sex feminin din ciclul primar de învățământ

Rezumat: Până în prezent în domeniul teoriei și metodicii educației fizice s-a acumulat un bogat material experimental care atestă mari posibilități de dezvoltare a capacităților motrice și în special a celor coordinative, la elevii din clasele primare. Toți specialiștii domeniului educației fizice și sportului sunt de acord că exercițiile bazate pe coordonare trebuie introduse la vârste anterioare adolescenței deoarece adolescența nu e un moment potrivit pentru începerea elementelor de antrenare a coordonării. Totodată, influența capacităților de coordonare asupra motricității generale a elevilor de vârstă școlară mică nu a fost studiată suficient.

Cuvinte cheie: capacități coordinative, ciclul primar, fete.

DANCE AND MUSIC IN PHYSICAL EDUCATION LESSONS FOR STUDENTS

Lector univ. dr. Nanu Liliana
„Dunărea de Jos” University of Galați

Abstract: *In the physical training activity, dancing becomes a specific way which presents the perfect combination of appearance, actuating execution, musical background, affective feelings and ability of rendering the movements, joining other sports disciplines in order to accomplish the various training objectives and to improve the performers' biological traits.*

Key words: *dance, improvement, music, physical education lessons*

At present, the concerns for the growth, the harmonious and mental development of the young generation, for health strengthening and for fighting against sedentariness are combined in the interest stimulation for practicing various movement activities at any age.

Platon considered that “Gods gave humans two arts: *dance* and *music* in order to educate their energy and mind under the harmony sign”.

The dance is a general phenomenon, spread in time and space, which conquered all the countries, all the social classes, under various forms: serious or happy, chaste or voluptuary, elegant, sensual or vulgar, expressing wishes, passions, hopes, etc. Through all time, the dance had taken various forms, approaching different genres which have a various “language” and which take shape in: the classical dance or jazz-dance, inspired from the jazz music, the character dance, company dance, folk dance and ballroom dance etc.

In the physical training activity, dancing becomes a specific way which presents the perfect combination of appearance, actuating execution, musical background, affective feelings and ability of rendering the movements, joining other sports disciplines in order to accomplish the various training objectives and to improve the performers' biological traits. The predilection for rhythm, for movement of the young generation, made that the physical practice in the form of dance to be loved and used in the physical training lessons, at the level of all the education cycles, enriching their inner life.

In the dancing art, the main role is occupied by **music** due to the organic connections between the artistic and actuating actions and musical background characteristics.

Music represents a special form of sound. It is not only pleasant to hear but it comprises a system of

rhythms, connections, proportions and harmonies which exist all over the natural world and in the world created by man, from the movement of the plants around the sun to the growth of the cells and plants, to numbers and sacred proportions of ancient religions and myths, to architecture and mathematics. Music can avoid the logical and analytic filters of the mind in order to establish direct contacts with the profound feelings and passions from the bottom of the memory and imagination. This leads to the apparition of physical reactions, of expression through movement, through dancing.

In dancing, the true musicality consists not only in the sense of rhythm expressing but, in the profound understanding of the music play, of the song, harmony, dynamic, style and its emotional content. The movements coordination with music imposes the complete and conscious subordination of the movement act to the shape and content characteristics of the used songs. Thus, in dancing the presence of the musical background cannot be understood as a common “background” but as a methodical, aesthetic specific way, which assures precision orientation in space and time, artistic expressiveness, elegance, easiness in execution etc.

In order to improve the teaching process the physical training lessons in higher education, especially for enriching the dance and music knowledge there have been proposed specific themes, and for finding out the students' opinions regarding the usage of these means an inquiry has been made, distributing questionnaires with specific questions.

At the basis of the work ***hypothesis of the hereby work*** supposes that if in the students' training process appropriate methods and means are used corresponding to their options and desires, superior results can be achieved in the process preparing the physical training

lessons, but they can also stimulate the interest of independent practicing the workout in the form of dance accompanied by appropriate musical background.

The examination methods were: the study of the bibliographical material, observation, questionnaire-type inquiry and the method of graphic and tables representation.

The scientific intercession – the examination has been made during the academic year, between 15th October – 15th March 2010, with the students in the 1st year (girls and boys) from

the Economic and Administration Science Faculty (72 students – 14 boys and 58 girls) from the Law Faculty and from the Arts Faculty in "Dunărea de Jos" University from Galați.

The questionnaire-type inquiry has been made with 142 students and it comprised 8 questions with 3, 4, 5 or 6 answer variants, responders having to choose only one answer and having the opportunity to express their own opinions – table 1 – for the first 4 questions:

Table 1

| 1. Importance of the options | | 2.The favorites discipline | | 3. Dance effects | | 4. Music's role | |
|------------------------------|-------|----------------------------|-------|------------------|-------|-----------------|-------|
| no. resp. | % | no.resp. | % | no.resp. | % | no.resp. | % |
| 127 | 89.4% | 106 | 74.6% | 32 | 22.5% | 136 | 95.7% |
| 3 | 2.1% | 8 | 5.6% | 64 | 45% | 0 | 0 |
| 12 | 8.4% | 5 | 3.5% | 28 | 19.7% | 6 | 4.2% |
| | | 4 | 2.8% | 18 | 12.6% | | |
| | | 5 | 3.5% | | | | |
| | | 14 | 9.8% | | | | |

At question no.1, regarding the importance of students' opinions referring to sport disciplines which they want to be practiced in the physical training lessons, 127 among them chose variant "a", meaning 89,4% accepting the possibility of choosing what they want to learning the physical training lessons, 2,1% chose variant "b" and 8,4% had other opinions – fig. 1.

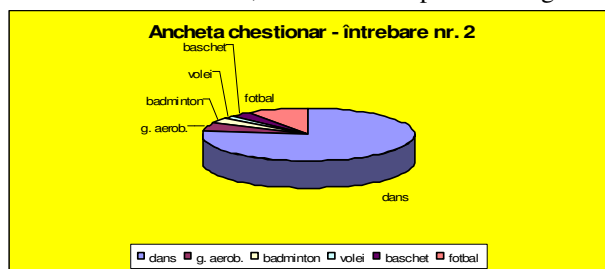


Fig. 1 The options of the students for the favorite discipline used in the physical education of children

Regarding question no.2, concerning the sport disciplines which they want to practice in the physical training lessons, 106 students (74,6%) chose dancing,

5,56% - aerobics and 28 students (19,7%) chose sport games.

At question no.3 concerning the effects of lessons with dancing means, 22,5% chose variant "a", dance stils high-spirited moodels, 45% consider that dance assures them a harmonious development, 19,7% think that dancing has a major contribution in improving the aesthetic appearance and 26% influence one's musical culture.

At question no. 4 – "if music has a major role in the lessons with dancing means", 136 students (95, 7%) answered positively and 6 students had other opinions.

After the analysis of the answers received at question no.5, about the effects of music in dancing lessons, the answers have been selected as follows: 37 students (26%) consider that music creates a "pleasant ambience", 23,2% think that "it averts the fatigue", 17,6% consider that the presence of music "contributes to assuming skills more quickly", 19% say that music "develops the creative ability", 14% think that music "awakens emotions and feeling" – table 2:

Table 2

| 5. importance of the music | | 6. The favorites dance type | | 7. The favorites music type | | 8. The utility of the dance | |
|----------------------------|-------|-----------------------------|-------|-----------------------------|-------|-----------------------------|-------|
| no. resp. | % | no. resp. | % | no. resp. | % | no. resp. | % |
| 37 | 26% | 38 | 26.7% | 40 | 28.1% | 124 | 87.3% |
| 33 | 23.2% | 42 | 29.5% | 29 | 20.4% | 12 | 8.4% |
| 25 | 17.6% | 25 | 17.6% | 30 | 21.1% | 6 | 4.2% |
| 27 | 19% | 37 | 26% | 31 | 21.8% | | |
| 20 | 14% | | | 12 | 8.4% | | |

In order to find out "the favorite dancing genre" for the physical training lessons at the 6th question the majority of students chose latino and modern dancing, but there is a part that chose folk dancing (26%).

Question no.7 is important because it verifies the students' opinions regarding the favorite music genres in order to be used in the dancing lessons, in this way it is carried forth the fact that beside the latino music (28,1%), disco (20,4%), hip-hop (21,8%) students have preferences regarding the usage of folk music, 21,1 % among the respondents choosing the music genre.

Concerning the "usefulness of the dancing steps" outside the physical training lessons at question no. 8 124 students (87,3%) answered positively, 12 answered negatively and 6 had different opinions.

As a consequence of the inquiry the following conclusions have been **observed**:

1. Dance and music are means which can contribute to improving the physical training lessons at the level of all education cycles, thus at the level of higher education. A part of these assertions are justified by the special literature, but also by the answers received in the hereby inquiry.

2. The survey made with the students shows that in proportion of almost 90% they prefer having a word in choosing the disciplines and the means used in the physical training lessons, but 80% from the respondents prefer dancing lessons and aerobics against lessons with sports games.

3. 95,7% from the respondents think that music has a major role in the dancing lessons because it creates a pleasant ambience, it assures high spirits, awakens emotions and feelings, it contributes to the formation and to the improvement of some specific skills and last but not least it adverts the fatigue.

4. Concerning the answers regarding the favorite dancing and music genres, which can be made in the physical training lessons, many of the respondents chose the modern dance the ballroom dance and disco and latino music, surprisingly more than a quarter (26%) have chosen the folk music.

5. The registered results show that dancing and music are means which can be successfully used in the students' physical training lessons, being agreed by both boys and girls.

After the analysis of the present inquiry it is highlighted that dance and music are means which can contribute to the improvement of the physical training lessons in higher education, reason for which **we propose** the popularization and the usage of these means at the level of all education cycles, especially that they do not need a very fastidious material basis.

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Danse et musique dans les cours d'éducation physique pour les étudiants

Résumé: Le travail de l'éducation physique, la danse est un moyen spécifique qui sont tenues entre la combinaison réussie, les performances du moteur, l'accompagnement musical, l'expérience émotionnelle et la capacité a jouer beaux mouvements, de rejoindre les autres sports pour atteindre les objectifs de formation diverses et d'améliorer les caractéristiques biologiques entrepreneur.

Mots clé: danse, musique, cours d'éducation physique

Dansul și muzica în lecția de educație fizică a studenților

Rezumat: În activitatea de educație fizică, dansul devine un mijloc specific care prezintă îmbinarea reușită între ținută, execuție motrică, acompaniament muzical, trăire afectivă și capacitate de redare plastică a mișcărilor, alăturându-se altor discipline sportive pentru îndeplinirea diferitelor obiective de instruire și îmbunătățirea caracteristicilor biologice ale executanților.

Cuvinte cheie: dans, muzică, optimizare, lecție de educație fizică

THE PSYCHOLOGICAL PREPARATION TO INCREASE SPORTING PERFORMANCES OF 10-12 YEARS GYMNASTS

Lector univ. dr. Nanu Liliana
„Dunărea de Jos” University of Galați
Prof. univ. dr. Grigore Vasilica
National Academy of Physical Education and Sport

Abstract: *The psychological factor is carried forth and it proves its importance during the competition, especially when the possibilities and the chances of the contestants are or less equal, the final aim being the successful participation in competitions.*

Key words: *competitions, emotions, the psychological training, stress*

It is known that in the sport activity, “the performances are gained by young men having special biological structures, with egregious actuating and psychic qualities and who are preparing with perseverance a long time” in the sport training (Drăgan I., colab., 1994).

Nicu A. (1993) affirm, the sport training is a long standing process of adaptation, which deploys during several years, fact for which its efficient guidance cannot be realized than on the basis of scientific provisions of the assemblies of objectives, decisions and means.

At the same time with the amplitude of the performance sport, it started to be talked more and more about the importance of the psychic factor of the training in the performance sportsmen, fact which has determined the carrying out of numerous studies and researches completed in collecting a rich conclusion documentation having also an applicative character.

The psychological factor is carried forth and it proves its importance during the competition, especially when the possibilities and the chances of the contestants are or less equal, the final aim being the successful participation in competitions.

It is known that each sportsman has his characteristics, therefore, numerous are the cases in which well-trained sportsmen from the technical and tactical point of view and cases in which sportsmen having insufficient psychological technical training, but are animated by the desire to win, have defeated the technical well-trained opponents but with a weaker mind. Thus when the physical and technical training are solved, the sports competition is no more than a psychological battle of nerves, mind, will, feelings and reason. In J. Cruz’s vision (1996) what distinguishes a champion from other sportsman, is just his ability to control his emotions.

It was scientifically proven that almost all the decisive moments of a competition, sportsmen present a

variety of reactions. Some of them present a variety of reactions. Some of them present psychological symptom (excessive perspiration, tachycardia) others present emotional variation (nervousness, irritability and aggressiveness) and other behavior modifications (insomnia, crunch his nails and isolate himself). In these situations the recommendation is that these reactions should be controlled so as the countless number of training hours is not used in vain.

Stir C.C. (2003) identifies a series of factors causing negative emotions among which he mentions: insufficient training before competition, making major mistakes, fail a test or the fear of failing, the lack of awareness of his own progress in comparison with the evaluation of other competitors, the comments of those around them, the viewers, their own and others’ expectation etc. Beside these factors, in the female artistic gymnastics the age factor interferes, where the sport career starts early. Taking part at the School or National Championship starts at the age of 8-9 years, the emotional immaturity being able to compromise the countless training hours not managing, many times, to raise up to the standards and requirements of the performance sports. D.M. Samulski (2002) underlines the fact that early training, but especially the exaggerated efforts in the training artistic gymnastics may cause psychological and social problems to children.

The psychological training problem in gymnastics is very topical providing the growth of the international competition system and especially of the sports bitter struggle in order to occupy a place on the podium. This is the reason why, this research proposes by using adequate specific means to contribute to eliminating the negative emotions tracked during the training and the competitions of the 10-12 year old gymnasts, but also to the development of the positive stimulating emotions.

Thus the aim of the research is the high lightening of the fact that the psychological preparation may have major influences in achieving superior performances in gymnastics.

At the *basis of the work* conjecture of this research it is supposed that if in the training process of 10-12 year old gymnasts are used appropriate psychological programming, the quality of the training process improves and also the sport performance will increase.

The object of the research is the performing behavior of the 10-12 year old gymnasts from CSS Galați, on the basis of proposing some experimental psychological curriculum.

The subject of the research is the appliance technology of the psychological training in order to supersede the negative emotions and to develop the positive emotions of 10-12 year old gymnasts.

The used research means are: the study of the bibliographical material, pedagogical observation, experimental study and the street method.

The scientific intercession – the examination was made between 15th September 2009 – 15th March 2010 on eight. 10-12 year old gymnasts from CSS Galați, at the gym. The hereby research has been made in three stages as follows:

The 1st stage I based on the study of the data from the special literature, on the observation of the sports women's attitudes, temperament and

personalities during the trainings and competitions. Thus it could be observed that, although the gymnasts during the training had satisfying results, in competitions they were not very sure of their own forces reason for which the results were low.

The 2nd stage has been oriented to the study of the experiment and the work conjecture, tracking the temperament type of the gymnasts included in the experiment study (choleric, sanguine, phlegmatic, melancholic) and of the single causes (accidents, lack of self adjustment and self-analysis) which determines the achievement of low results and identify and propose specific psychological techniques (reduction of contest plans, simulation during training of the competition conditions, establishment of a routine behavior practicing the visual control, keeping the focus on the present and unknown situations, positive strengthening, usage of the key words in order to reject failing, the situations etc) in order to abolish the negative emotions and apply positive stimulation to achieve the aimed objectives.

As a consequence of the observation of the gymnasts' pedagogical behavior during training and competitions, individual discussions and the temperament traits evaluating of each gymnast in the experimental study the following information were distinguished and the following objectives have been created using the proposed psychological techniques in all the trainings – table 1:

Table 1

| <i>Baciu Georgiana</i> | |
|-------------------------------|---|
| Temperament | - sanguine; |
| Psychological characteristics | - extrovert, stable, motivated for performance – the winner type ; |
| Training objectives | - leader of the group she has the role of encouraging and motivating her colleagues; - improving the relationships with her colleagues; |
| Performance objectives | - classify in the first 20 gymnasts of the country at all-around; |
| Psychological techniques | - the group-feeling technique (unifying the group feeling): “ in the difficult situation I try to motivate my colleagues”; - ignoring the opponents; |
| <i>Postolache Ana</i> | |
| Temperament | - sanguine; |
| Psychological characteristics | - extrovert, stable, motivated for performance – the winner type ; |
| Training objectives | - improving the self-confidence, increasing the ability to express the movements; |
| Performance objectives | - occupy a place on the podium at the school championship; |
| Psychological techniques | - the winning - feeling technique :”during the exercise I always think I am going to win”; - focus attention on accomplishing the proposed objectives; |
| <i>Purice Casina</i> | |

| | |
|--------------------------------|--|
| Temperament | - melancholic; |
| Psychological characteristics | - introvert, unstable, extrinsic motivation – defeated type; |
| Causes | - accident; |
| Training objectives | - over passing the psychological "barrier" caused by the accident at the forearm; - adopting a winner attitude; |
| Performance objectives | - scoring at least 50 points at all-around; |
| Psychological techniques | - recovering through encouragement and learning the repression technique: "avoiding the memory of the accident"; - mental anticipation through self-encouragement: "I will be pleased by myself"; - awareness of own quality : "I believe in my training and my technique"; - self-affirmation: " I will get myself a present after the competition"; |
| <i>Stoica Laura</i> | |
| Temperament | - choleric; |
| Psychological characteristics | - extrovert, unstable, extrinsic motivation – defeated type; |
| Causes | - lack of behavior self-adjustment; |
| Training objectives | - development of the volitional abilities and of self-development; - adopting a winner attitude; |
| Performance objectives | - occupy a place on the podium at balance beam and floor; |
| Psychological techniques | - establishing many objectives during training; - awareness of the actual methods: "only by training hard I will accomplish superior results"; - focusing on the proposed objectives; - hiding emotions from the opponents; |
| <i>Caldararu Raluca</i> | |
| Temperament | - phlegmatic; |
| Psychological characteristics | - introvert, instable, extrinsic motivation – defeated type; |
| Causes | - lack of self-analysis; |
| Training objectives | - increasing the interest for performance activity; - adopting a winner attitude; |
| Performance objectives | - scoring at least 50 points at all-around; |
| Psychological techniques | - techniques focused on tasks by using the key-words and avoiding the negative feeling; - increase the motivation for performance by analyzing the success moments; |
| <i>Alexa Oana</i> | |
| Temperament | - sanguine; |
| Psychological characteristics | - extrovert, stable, motivated for performance – the winner type ; |
| Training objectives | - gaining self-confidence and stimulating the courage; - adopting a winner attitude; |
| Performance objectives | - qualification among the first 20 gymnasts; |
| Psychological techniques | - development of the effort perseverance through encouragement and self – praise; - conscious participation in the self development process by talking with the coach; |
| <i>Dragomir Elena</i> | |
| Temperament | - phlegmatic; |

| | |
|---------------------------------|---|
| Psychological characteristics | - introvert, stable, motivated for performance – the winner type ; |
| Training objectives | - development of the volition, perseverance and aiming for this goal; |
| Performance objectives | - vault and floor qualification among the first 6 gymnasts in the country; |
| Psychological techniques | - awakening the interest for performance and proposing new challenging techniques; - sustaining the voluntary effort by encouragement and support from the colleagues; |
| <i>Racovita Angelica</i> | |
| Temperament | - melancholic; |
| Psychological characteristics | - introvert, unstable, extrinsic motivation – defeated type; |
| Causes | - lack of self-determination; |
| Training objectives | - increasing the interest in achieving superior performances; - adopting a winner attitude; |
| Performance objectives | - scoring at least 50 points at all-around; |
| Psychological techniques | - awareness of the abilities level of her: "I will manage to do the exercise very well" - learning new elements divided in parts, with many repetitions; - perception and analysis of the success / failure feelings; - praises and personal encouragement, from colleagues. |

In *the 3rd stage* it has been registered the progress made by the 10-12 year-old gymnasts, from the point of view of psychological preparedness during training and competitions as a consequence of the experimental curriculum appliance.

The efficacy of the proposed curriculum has been carried forth through the achievement of the performance objectives at the School Championship from Buzău that has taken place between 13th – 14th March this year.

1. *Baciu Georgiana* – 12th place at All-around;
2. *Postolache Ana* – 3rd place at All-around, 2nd place at Floor, 2nd place at Balance beam – School Championship;
3. *Purice Casina, Caldararu Raluca, Racovita Angelica* – scored 50 points in All-around;
4. *Stoica Laura* – 3rd place at Balance beam;
5. *Alexa Oana* – 19th place at All-around;
6. *Dragomir Elena* – 3rd place at Vault.

On the basis of the registered data the following **conclusions** have been drawn:

- The experiment confirmed the work conjecture according to which if in the gymnasts' training process (physical, technical, artistically, theoretical tactics) are used psychological programs, the quality of the training process can be improved and the sports performance will increase.

- The programming of the training objectives has been made on the basis of knowing the actuating potential and the psychological profile of each

gymnast, achieving the improvement of individualized training.

- The conscious participation of gymnasts, stimulating the desire for knowledge, self-knowledge, self perfection, lead to the accomplishment of the training and performance objectives.

- The usage of positive emotional resources (self-confidence, respect and dignity, ambition and pride, motivation for performance etc.) has been encouraged.

After the data analysis **we recommend** that coaches focus on the psychological training., developing the gymnasts' ability of self-esteem their executions, over – passing the difficult situations, volitional qualities cultivation, increasing the self-confidence, positive-thinking stimulation etc, in order to achieve superior results in training and competitions.

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Préparation psychologique pour augmenter les performances sportives des gymnastes 10-12 ans

Résumé: Facteur psychologique est mise en évidence et démontre son importance pendant les compétitions, surtout compte tenu des possibilités et des opportunités de participants sont plus ou moins égale, le but ultime étant de participer avec succès a des compétitions.

Mots clé: préparation psychologique, de l émotion, le stress, la formation, la concurrence

Pregătirea psihologică în creșterea performanțelor sportive ale gimnastelor de 10-12 ani

Rezumat: Factorul psihologic se evidențiază și își demonstrează importanța în timpul desfășurării concursurilor, mai ales în condițiile în care posibilitățile și șansele participanților sunt mai mult sau mai puțin egale, scopul final fiind acela de a participa cu succes în competiții.

Cuvinte cheie: pregătire psihologică, emoții, stres, antrenament, competiții

SPORTS AND PHYSICAL EDUCATION IN NEW EDUCATIONAL BACKGROUND

Lecturer. dr. Constantin Ploșteanu, FEFS, University “Dunarea de Jos”, Galați

Lecturer. dr. Dragu Mircea, FEFS. University “Dunărea de Jos” Galați

Summary: Education is a specialized activity, specifically human, which maintains conscious development, is an organized form, systematic and continuous training of human personality, education, optimizing, if possible, the relationship heredity - environment.

As a result of our educational activity and under the influence of certain factors, education should creates the framework conducive towards those domestic actions able to influence the development of human personality.

Personality development is achieved through continuous education, continuous teaching communication and teaching.

Information field calls for new benefits and the performance of contemporary educators and trainees like.

Teaching communication is a transfer of information in the context of the educational process.

Teaching Communication involves an interaction type feedback – drop out.

Teacher-student dialogue through the channel widens and nonverbal (nonverbal subsystem), is visual message, physical posture, gestures or facial physiognomy educator can arouse intellectual or emotional reverberations on students.

Communication encompasses the didactic and pedagogic information flows (verbal, nonverbal) to score in many directions speech. The outcome approach a lot of disciplines/other areas studied.

Keywords: education, personality, human training

Introduction

Values education is completed, intertwine to determine the final value purpose, namely, personality development, in order to receive new social and adapt to new situations that arise.

The complexity and pace of contemporary life to which man is forced to adapt to new conditions imposed by the globalization, educational require searches to be more sustainable form of skills from school.

It is imperative to implement the new education knowledge among students, to apply on time causes and effects dangers surrounding our society from globalization and productivity growth.

Education - general and specific

Education aimed at training the ability to make decisions and to anticipate the future to find concrete solutions to solve problems faster.

Due to the complexity of the contemporary world of globalization and formed two lines of critical response to contemporary issues in education.

1. Department of damnation, refers to the decline of education and inability to react quickly to prepare tomorrow's world.

2. Department of constructive criticism, says the power of education and its ability to improve the complex situation of globalization. In this context individual contributes equally to its development and other development.

Organization of education is carried out around four pillars of knowledge (UNESCO report on education in the twenty-first century):

- Learning to know (knowledge acquisition tools);
- Learning to do (working with the environment);
- Learning to live together with others (cooperating with others);
- Learning to be (resulting from the first three).

Concepts of Education

1. Formal education includes all the intentional and systematic influences, developed within schools, for training and personality development.

2. Non-formal education, formative influences recovered after step outside and schooling (family, peer, youth institutions and organizations).

3. Informal education includes all the influences of unintended and not organized through the experience of life through participation in cultural life, facing the individual.

Education - the key determinant of physical development of the peoples

Etymologically, the word "education" is to raise, train, etc. to form. Education involves removing individual "state of nature" and insert "the state of culture."

Education is a specialized activity, specifically human, deliberately supporting development.

Education is an organized form, systematic and continuous training of human personality, education, optimizing, if possible, the relationship heredity - environment.

Education creates the conditions conducive to domestic action conducive to certain external factors,

the formation of personality is both a result of educational activity and to conduct its premise.

personality development is achieved through continuous education, continuous teaching communication and teaching.

Information Field calls for new benefits and the performance of contemporary educators and trainees alike.

Teaching communication is a transfer of information in the context of the educational process.

Teaching Communication involves an interaction type feedback..

Educational message is the result of three sub-signs: verbal and nonverbal.

Minutes subsystem (communication teaching) occupies a central place in teaching-knowledge verification. Verbal language are just not a function of communication, but a function call and an expressive function (destination-oriented). Verbal language is the language developed with words.

Communication in education

The teacher-student dialogue and other resorts are communication that can convey information content, making court expressive dialogues, modeling, to involve affected both issuers (teachers) and receivers (students) - Action stimulus / response. Para language is a form of non-verbal language, a form represented by the tone and inflection of voice, rhythm of speech, way of emphasizing the word, the breaks between words, verbal tics.

Teacher-student dialogue through the channel widens and nonverbal (nonverbal subsystem), is, visual message, physical posture, gestures or facial physiognomy educator can arouse intellectual or emotional reverberations on students.

Communication encompasses the didactic and pedagogic information flows (verbal, nonverbal). The outcome approach indersciplinarity / inter-domain studied.

Optimizing communication is the result of two cerebral hemispheres. Sensory-motor functions (motility, sensitivity, hand movements, leg movements, eye movements) are controlled by each hemisphere (right, left) directly and vice versa (crossover).

Each hemisphere reverse order half her body with the same functions and the same roles, which is not the case with language, thought so.

The left hemisphere is related to language, words, figures, analysis and abstraction ability, dependence on time (care to proceed methodically).

Right hemisphere has specific features, spatial thinking and the ability to see abstract. Her arrangements are non-verbal expression.

The two hemispheres on the one hand and opposing on the other hand is completed.

| THE LEFT HEMISPHERE | RIGHT HEMISPHERE |
|---|---|
| MINUTES - use words to name, describe, define | Nonverbal - the consciousness of things, but minimal connection with words. Verbal stimulus (tone of voice) |
| ANALYTICAL - discover things step by step, element by element | SYNTHETIC - puts things together to form wholes |
| ABSTRACT - extract information using it to represent all | Concrete - refer to things as they are in the moment |

Imagination and intuition are its dominant features, for which office is held artistic and musical competence. Intuitive approach is the opposite of rational. The operation is based on the association of ideas, interactive approach, the synthesis of relations between objects, to reconstruct the information into a coherent whole.

Start providing strategies to address students so that they will be able to notice, understand and prioritize the information received in different ways and to form a power information, which is the premise of effective learning.

Education in today's society - New education

1. Environmental education - environmental responsibility and its problems.
2. Economic education - acquiring consciousness of direct participation in the economic development of society and economic conduct.
3. Modern health education - education for leisure activities, nutrition education, sex education, education, modern housewife.
4. Population Education - refers to specific populations.
5. Intercultural education - promotion of international cultural cooperation.
6. Human rights education - developing attitudes of tolerance, respect and solidarity.
7. Education and mass media communication - speech recovery capabilities.
8. Education for leisure activities.

Regarding education for leisure activities, it is recorded that sport is a culture of body, evolving into a consumer market news, sports, leisure type (recreational) belong to a cultural dimension. It requires that the social value of the current generation, which may influence the behavior of these new sports and life forms to carry on traditional activities, sports festivals, folk dances, festivals, and new guidelines for the type eurhythmy artistic expression, modern dance , aerobic dance, music, art, fitness, sports games, jogging, to approve the formation of attitudes and leisure habits of

practice, aimed at training human implications in contemporary health hazard prevention: stress and anxiety, physical inactivity and obesity, the environment and regeneration, the Internet and the book, exercise and nutrition.

Globalization of products, the explosion of advertising and media, the emergence of many jobs in confined spaces (buildings vertically, air conditioning, long corridors, computer), sedentary lifestyle, tend to cause physical sport and to lose the moral substratum against personal goals of health, leisure time consumed, the pleasure of living in an environment as natural, social distinction, here are some contemporary issues that society must not overlook.

Leisure behavior of individuals depends on: the profession, competence, group needs, the capacity for cooperation. Sport is a means of training the group through a stimulus-response relationship with nature through the first relationship with the psyche. All these realities are the privilege of continuing education activities through movement rehabilitation that spare time is consumed.

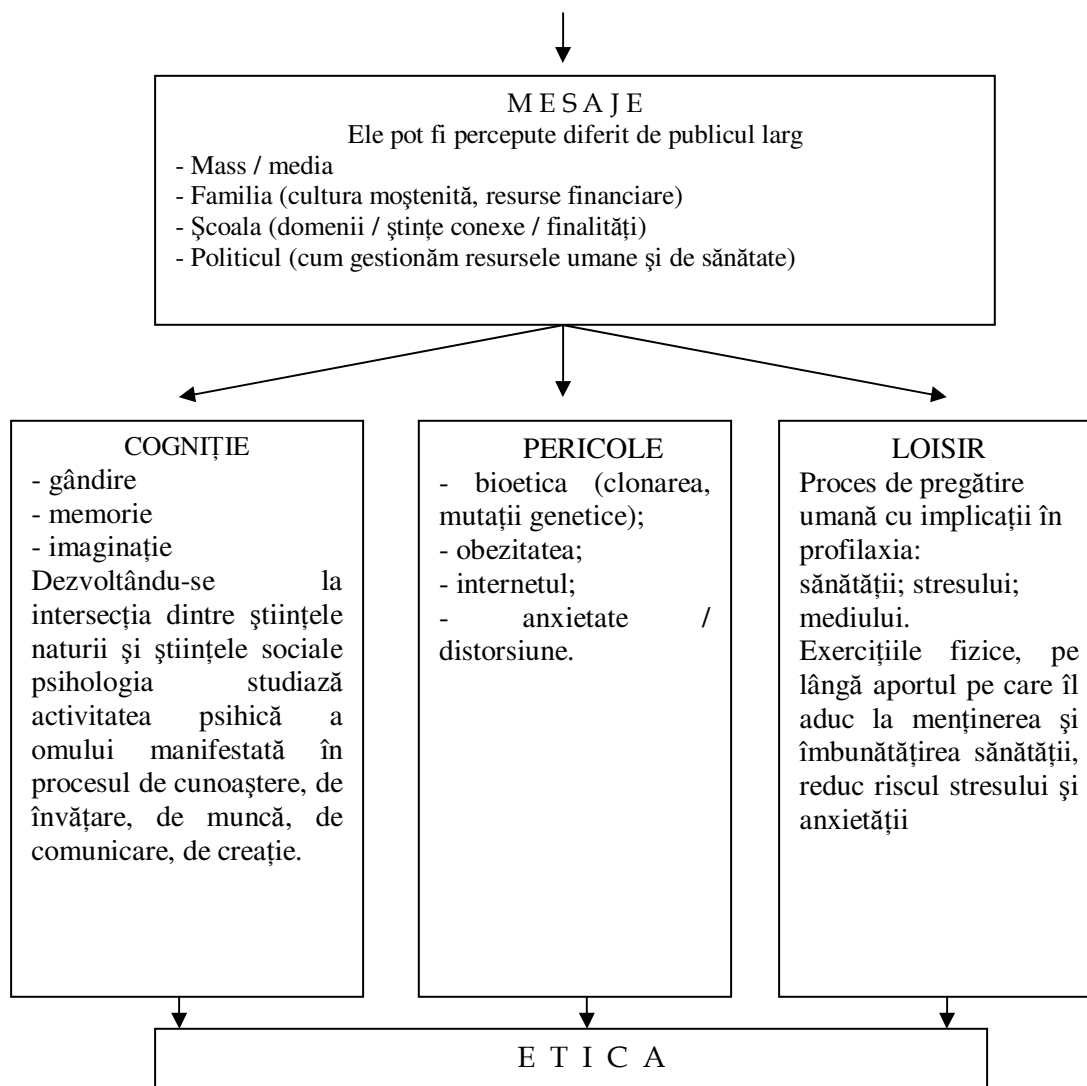
Lifelong Learning

Lifelong learning is all ways for people to inform and shape continuously in order to develop the individual personality and participation in the advancement of society.

School physical education contributes greatly to continuing education completion (health, socialization, environment). Home is the adaptive function of personality, to produce correct answers to requests for natural and social environment.

Sports Personality develops some common features such as: the need for activity, the need to dominate, the need to affirm the action, the need for pragmatic reasons, the need for communication.

Preparation of human complements education. Consumed leisure activity (leisure) seeks enhancement of human resources for health and wellbeing, taking part in the process of human training.



A new psychological dimension focuses on the culture of sport as a means of solving human problems, asked to focus on learning: imitation, socialization, literacy, the skills, habits, manners.

Sport as part of the leisure elements of social consciousness with language and education, has a universal and permanent moral rules depends on legal, social control, administrative, common goods. Sporting values are part of nature (human nature), ethics education (moral) that athletes develop a respect and is the expression of the spirit (human contact with outside forces soul) subjective incorporated into the objective world by means of norms, rules, principles of conduct that tend to be absolute: Well, nice and right. In this respect we refer to the sport for health. School contribute to the knowledge and differentiating features of adaptation to exercise. The desire to improve health and adaptive capacity through exercise, without

knowing to know their actual capabilities, often leads to incompatibility effort - systems and functions. Body differs from the untrained trained through a cheaper physiological functioning both at rest and at moderate physical demands. Improving long-term adaptation is achieved only under conditions of constant requests from long-term exercise.

Small steps are taken under a consumer society to bring sporting activity to the rank of "Sports for All", is health sport and recreation, to find the best offers programs both at school and in adults, which aim towards increasing affluence of young people to freely practice a sport or institutionalized. In the context of new education, requires the differentiation of information taken from newspapers and spoken, especially given the students information on the Internet. There can be no accumulation of new procurement skills that are not scientifically thus can

form skills, work can be channeled to a healthy lifestyle. Advertising is often the echo of truth. Among the factors responsible for the shortcomings and difficulties of promoting physical education and sport have decision-makers by reducing the mass sports activities at school level by the lack of commercials advertising the expansion of visa-vi unlimited and often aggressive advertising and advertisements in other areas. Fortunately sport receive moral support, images which may express or imply a variety of ideas and states of good and beauty.

Education and learning

Physical education as a process contributed to the continuing education specialist, education is a systemic approach (each component of the educational process influences the others and they, in turn, is influenced by other components).

System components are: the goals and objectives, learning content, teacher and students, teaching strategy, assessment, between these components establish different types of relationships (causal, organization, mailing - ie it complements the functional nature) - for example: identifying goals and objectives and determine the performance assessments of skills.

Content learning is the primary means of achieving educational goals, depending on the specific teaching content and objectives, the teacher can choose the directory type strategies (algorithms) or permissive type (heuristic, creative).

Component of physical education and sport is given adult personality development.

In the context of the **creative dimension of personality** refers to "a complex psychological traits and skills, which under favorable conditions, generate new products and value for society."

Creativity in education training can be done by:

- Cultivation of innovative thinking;
- Professor attitude, his relationship with students. It is not indicated his position authoritarian, despotic somewhat, because it creates emotional blockages;
- Formulation of educational objectives.

To develop creativity, to avoid bottlenecks (external obstacles, inhibitory factors) and to stimulate creative potential. The game takes positive failures / barriers of communication.

Inhibiting factors of creativity in school

Characteristics of students: the views of colleagues intolerance, devalued self-perception, captured in statements like "I have never done anything particularly" ridiculous fear, conformism, the tendency to interpret any structure to be closed

Teacher characteristics: some behavioral situations, such as sanctioning audacity to ask awkward questions, put excessive emphasis on competition or

cooperation in the classroom, early criticism, the use of phrases like "that's not logical," who knows the correct answer "Can you prove" the emphasis on reproductive insufficient appreciation of originality.

Conclusions

Integration of content by switching to a mechanical learning, undertaken on a principle, the assimilation of theoretical knowledge to detail not only the effects but also their causes.

Training the students' self-regulation mechanisms and by addressing socio-pedagogical positions.

Physical education for the physical act, but also for psychic phenomena and personality traits, also by its specific activities, physical education and acting on the functionality of the nervous system, thereby improving intellectual activity.

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Sports et de l'éducation physique en études nouvelles

Sommaire: *L'éducation est une activité spécialisée, spécifiquement humaine, qui soutient le développement conscient, est une forme organisée, systématique et la formation continue de la personnalité humaine, l'éducation, l'optimisation, si possible, l'hérité relation - environnement.*

L'éducation crée les conditions propices à l'action intérieure propice à certains facteurs externes, la formation de la personnalité est à la fois un résultat de l'activité éducative et de mener ses prémisses.

Développement de la personnalité passe par l'éducation continue, la communication d'enseignement continu et de l'enseignement.

Renseignements sur le champ des appels pour les nouvelles prestations et la performance des enseignants et des stagiaires contemporaine comme.

Enseigner la communication est un transfert d'informations dans le cadre du processus éducatif.

Enseignement de la communication implique un retour type d'interaction - retroacțiunea. Le dialogue entre enseignants et élèves à travers le canal s'élargit et non verbale (sous-système non verbale), c'est à dire, le message visuel, la posture, la gestuelle ou un éducateur physionomie du visage peut susciter réverbérations intellectuel ou émotionnel sur les étudiants.

Communication en globe les flux d'informations didactiques et pédagogiques (verbale, non verbale), traçage discours pluridirectionnelle, et plurivoque multi. L'approche indisciplinarité résultats / inter-domaine étudié.

Mots-clés: l'éducation, de la personnalité, la formation de l'homme

Educația fizică și sportivă în contextul noilor educații

Rezumat: Educația este activitatea specializată, specific umană, care susține în mod conștient dezvoltarea, este o formă organizată, sistematică și continuă de formare a personalității umane, educația optimizând, în măsura posibilităților, relația ereditate – mediu.

Educația creează premisele interne favorabile acțiunii prietnice anumitor factori externi, formarea personalității fiind atât efect al acțiunii educative, cât și premisă pentru derularea acesteia.

Dezvoltarea personalității care se realizează printr-o educație permanentă, continuă de comunicare didactică și pedagogică.

Câmpul informațional contemporan cere noi prestații și prestațe educatorilor și educaților deopotrivă.

Comunicarea didactică reprezintă un transfer al informațiilor în contextul procesului educativ.

Comunicarea pedagogică presupune o interacțiune de tip feed-back – retroacțiunea.

Dialogul profesor- elev se lărgeste și prin intermediul canalelor nonverbale (subsistemul nonverbal), adică, mesajul vizual; ținuta fizică, fizionomia feței sau gesticulația educatorului pot stârni reverberații intelectuale sau afective asupra elevilor.

Comunicarea didactică și pedagogică înglobează aceste fluxuri informaționale (verbal, nonverbal, paraverbal), profilând un discurs pluridirecțional, multicanal și polisemantic. Este rezultatul abordării interdisciplinare/intercondiționări domeniului studiat.

Cuvinte cheie: educație, personalitate, pregătire umană

EXPERIMENT ON THE CONDITIONS FOR COMPLETION OF THE FOOT IN THE GAME JUNIORS FOOTBALL PLAYER 16 AGE

(Experimental study)

Ploșteanu Constantin, Assoc. dr., Faculty of Sport and Physical Education, University "Dunarea de Jos " Galați

Admir Hadžikadunić, Professor PhD., Faculty of Sport and Physical Education, University of Sarajevo, Bosnia and Herzegovina

Balint Gheorghe, Professor PhD, University "Vasile Alecsandri" of Bacau, Faculty of Health, Sports and Human Movement Sciences, ROMANIA

Summary: This paper aims to verify in practice, experimental methods and increase efficiency by means completion of the game similar to the junior "A", aged 16 years.

Complete, the science of scoring goals is an important deal, the first, so it attaches great importance to prepare and train future players. Here, we aimed at increasing the efficiency of completing the technical and tactical shooting action to carry the ball with his foot came down, skipped, in which punishment as a proper training in this area can improve the implementation of the gate fired.

Keywords: athletic training, football, finishing

Introduction

News of this paper is primarily reflect the needs of increasingly acute for football training performance, which lie next to the players. In the context of high-performance requirements, junior 16

model years, must be able to express themselves in the game, and defense and known forms of attack..

Organizing the defense can play better and lead more effectively by fewer hours of training, organizing

the game in attack, especially completion is a more delicate, which is primarily of value to the player.

The punishment which the player act with minimum space and time. Study statistics and video gives us valuable data on areas acceptable completion. Based on these considerations skills training for completion of which the penalty is a prerequisite in training performance.

Features characteristic of the age-specific training

1. In terms of physical preparation is the need to develop strength, speed and strength. But let's not forget that the youth is not yet an adult.

2. Preparation technique is optimal for consolidation and improvement. It seeks the development of individual technique and playing.

3. Preparation tactics made the game for both attack-defense phase.

4. Psychological preparation in the game and made subordinate to task.

5. I understand quite well the meaning of the game. It can play 11 to 11 normal-sized field, however, is bowing to groups of 5-5, 7-7, 8-8, 9-9, so there is a relation between the number of players and size land. During the game and / or training is 80-90 minutes.

In games 1-1, 2-2, 3-3, delimited field, will find themselves which are the qualities of the game, to make the attack and defense tasks.

Organizing research

The experiment: 11.02.2010-21.05.2010

Subjects: SC High School Sports Braila - experiment group, n=20

SC. FC. Oțelul Galati - control group, n=20

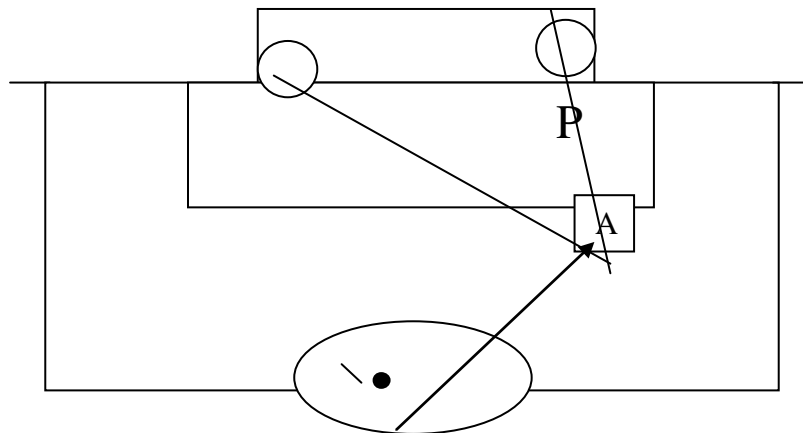
Research significance

The aim of investigation is different between the two training groups, and whether it meets the technical and tactical performance to draw the ball bearing from the foot down and jump down from the punishment of which at junior I.

The research hypothesis will argue the effectiveness of the training program, a program that will contribute to the formation and improvement of technical and tactical skills of the completion of the penalty area (16.50 m), junior, age 17 -18 years.

Control samples

1. Pulling the gate of which 16.50 m from the position of the gate twill ball came down at the two predetermined points (bottom to top corner or long - short elbow on the corner). The sample is held in a rectangle of 10.16 m and is made at the beginning and at the end of the experiment.



Deployment Framework:

P = goalkeeper

A = coach

X = the performer, is found to carry the ball perpendicular to the semi-circle of 16.50 m.

Execution mode:

X = A's step in walking and running speed;

A = X gives the ball away;

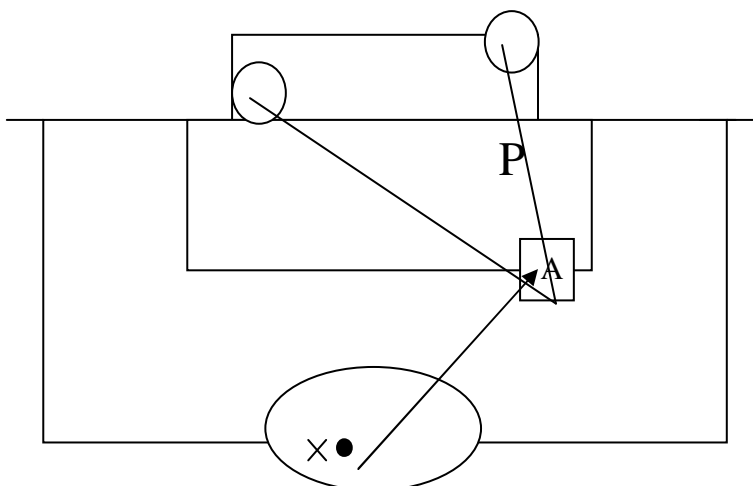
X = A passing back and shoot at the gate of one of the two predetermined points.

The sample is carried out which is 16.50 m.

Each execution within 10 seconds. Recovery time at home is 20 sec.

Perform tests on the 10-foot skilled.

2. Pulling the gate of which 16.50 m in diagonal position on the gate jump ball at the two predetermined points (below or above the upper term - short elbow on the corner). The sample is carried out in a rectangle of 10.16 m and is made at the beginning and at the end of the experiment.



Deployment Framework:

P = goalkeeper;

A = coach;

X = the performer, the ball is perpendicular to the gate in the semi-circle of 16 m.

Execution mode:

X = A's step up and run at speed;

A = catch the ball with one hand and offers skipped;

X = passing and shooting the ball skipped A gate in one of two predetermined points.

The sample is carried out which is 16.50 m.

Each execution within 10 seconds. Recovery time at home is 20 sec.

Perform tests on the 10-foot skilled.

Results of control samples and experimental group rules

Table 1

| No | Name/surname | Executions | | Executions | |
|----|----------------------------|--------------------|------|-------------------------|------|
| | | The ball came down | | The ball skipped coming | |
| | | T.I | T.F | T.I | T.F |
| 20 | Media | 2,75 | 7,2 | 2,55 | 7,6 |
| | Standard deviation | 0,44 | 0,41 | 0,51 | 0,68 |
| | Coefficient of variability | 16,55 | 5,69 | 20,01 | 8,95 |
| | Student test | p > 0,05 | | p < 0,05 | |

The results of the control rules of evidence and control group

Table 2

| No. | Name/surname | Executions | | Executions | |
|-----|----------------------------|--------------------|-------|-------------------------|-------|
| | | The ball came down | | The ball skipped coming | |
| | | T.I | T.F | T.I | T.F |
| 20 | Media | 2,6 | 3,75 | 2,65 | 2,75 |
| | Standard deviation | 0,08 | 0,44 | 0,48 | 0,44 |
| | Coefficient of variability | 26,17 | 11,84 | 18,46 | 16,15 |
| | Student test | p > 0,05 | | p < 0,05 | |

Graph compared with the evolution of groups included in research

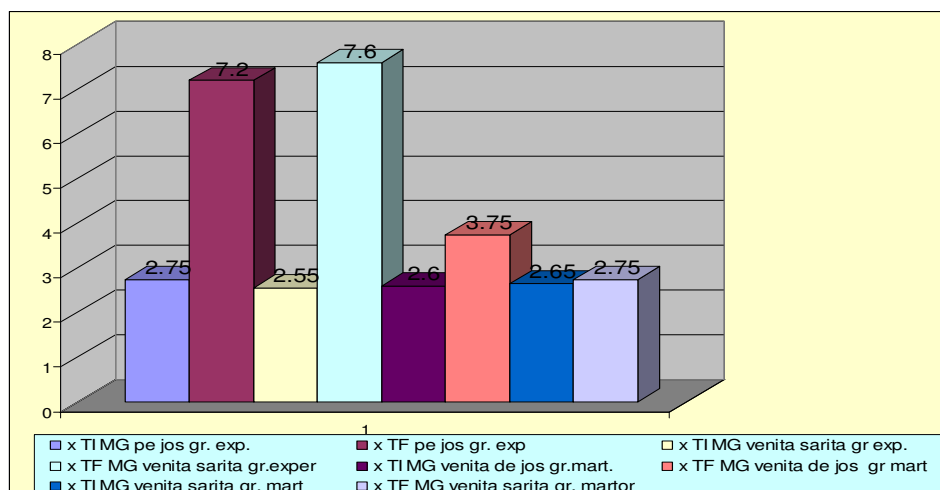


Chart No.1 Arithmetic average change in the two tests (TI: TF)
for the four tests assessed

Analysis of results and conclusions

Final results from the statistical calculation shows superior results in the final testing of the experimental group compared to control group, as shown in Table 1 and 2.

Considering the research's conclusion problems is that the proposed hypothesis on the possibility of increasing the completed technical and tactical skills training kicking the ball came down and jumped out of the penalty area that is viable, because it was not far from the game to say, training experiment was done to the concrete conditions of the execution of the penalty area during the game.

It is considered that attendance overall technique leads to the destruction intensity tempo of execution, so I insisted to guide implementation of the player in time and space to complete the most common actions in the area of 16.50 m.

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Expérience sur les conditions d'exécution du pied dans le jeu footballeurs juniors, de 16 ans (Etude expérimentale)

Sommaire: Cet article vise à vérifier dans la pratique, les méthodes expérimentales et d'accroître l'efficacité au moyen d'achèvement du jeu similaire à la junior «A», âgés de 16 ans.

Complète, la science de marquer des buts est un accord important, le premier, il attache une grande importance pour préparer et former les futurs joueurs. Ici, nous avons cherché à accroître l'efficacité de la fin de l'action technique et tactique de prise de vue de porter le ballon avec son pied est tombé, sauté, dans lequel le châtiment comme une formation adéquate dans ce domaine peut améliorer la mise en œuvre de la porte tiré.

Mots clés: entraînement sportif, le football, d'achèvement

Experiment privind finalizarea cu piciorul în condiții de joc la fotbaliștii juniorii, vârsta de 16 ani (Studiu experimental)

Rezumat: Lucrarea urmărește de a verifica practic, experimental, creșterea randamentului finalizării prin metode și mijloace analoage jocului de fotbal la juniori „A”, vârsta 16 ani.

Finalizarea, știința de a marca gol ocupă un loc important, chiar primul, de aceea se acordă o importanță majoră în pregătirea și antrenarea viitorilor fotbaliști. În acest context am urmărit creșterea eficienței finalizării prin acțiunea tehnico-tactică de tras la poartă cu piciorul din minge venită pe jos sau sărită, din careul de pedeapsă, deoarece printr-o pregătire corespunzătoare din această zonă se poate perfecționa execuția de tras la poartă.

Cuvinte cheie: antrenament sportiv, fotbal, finalizare

ASPECTS OF IMPROVING THE METHODOLOGY OF IMPLEMENTATION OF THE CURRICULUM, VOLLEYBALL, QUALITY LEVEL, CLASSES OF GRADE NINE FROM HIGH SCHOOL

Benedek Florian, University "Stefan cel Mare" of Suceava

Leuciuc Florin, University "Stefan cel Mare" of Suceava

Benedek Mirela, Teacher group I, at National College „Mihai Eminescu” Toplita

***Summary:** According to the modeling requirements up to the level of each class, there are intermediary models, which are able to provide the model's propriety of the volleyball game. In this project, we set as a target the idea of the necessity in order to improve operating methodology for achieving curriculum content. We proposed a model for group class grade nine, including an optimal baggage of technical – tactical knowledge required volleyball practice.*

***Key words:** methodology, curriculum, volleyball*

Introduction

The youth initiation from grade nine of High School into the secrets of volleyball game, learning and practicing it as soon as possible to acquire all shares of game set in the curriculum, has always been an operational objective for the physical education lesson. To successfully pass over these issues, put before education, teachers need to think in advance new formulations of instructional and educational requirements, new curricula, which by their terms, could give autonomy to the way the teacher thinks and acts for its completion, and thus be more flexible in the choice of objectives, methods, teaching resources and forms of assessment used to measure the educational quality level.

This study has its roots in the experience as a teacher and volleyball player. The years that I worked with the school team, made me better understand the psychology of the students and to know more on the requisite current and the future of the volleyball.

It is considered that the phasing techniques and tactical actions, as outlined in the school curriculum can be accelerated or even exceeded in the specific physical education lesson. To prove this, we formulated the following hypothesis: curriculum implementation methodology (chapter- volleyball) for Classes grade nine to twelve, can be improved without this being detrimental to other chapters, with a good selection, organized and systematically used methods and means.

After modeling requirements in each class, there are intermediate models capable of acquiring competitive game of volleyball. Contemporary Teaching has developed a special alert system, integrating it from this perspective, the scientific revolution and modern technology. In this project we started from the

necessity to improve operating methodology for achieving the curriculum content.

We proposed a model for group class grade nine, including an optimal baggage of technical – tactical knowledge required for the volleyball practice.

Separating this model, in intermediate models, according to the classroom level of knowledge it was established the methodology drive contents in curricula, for one school year and the beginning of the first semester and the end of the second semester.

We refer to these two periodss of the school year as the volleyball game can be practised successfully in outdoor weather conditions are favorable.

This study aims at development of a final plan and the class of grade nine requirements, applying an improved methodology. Achieving this task is reflected by the comparative study of results obtained in the two groups, namely control group and experimental group.

Material and Method

In carrying out the experiment of improving educational type, were used as subjects, students of classes, grade nine-A and B of the National College "Mihai Eminescu", Toplița.

The class team of grade nine- A, took a total of 14 students and the class team of grade nine- B, 12 students.

They chose these classes, although boys were not equal in numbers as their initial level was similar.

During the course of experimental work, they received an outdoor volleyball court and a gym of the school type. The teaching materials used in the experiment were: a device for measuring the height of jumps, volleyball balls and medicinal balls.

The educed number of hours in the physical education lessons, requires learning to find swift strategies to learn the game of volleyball.

Based on the work done, we have tried a fresh view on the actual content of the game of volleyball and instructional methods by which accelerated learning can be achieved, while leading to a full accelerated practice of the game of volleyball.

The tests of physical and technical verification tests were as follows:

- tests of physical development were: testing the speed of travel 3 meters and testing the explosive force of the leg muscles (detention);
- tests of the technique were: underhand serve, overhand serve, and taking the ball with 2 hands of thrown balls;

In the opening stage in the technical and structural movement, we considered important, accurate representation of their training, in the students's concept.

For that we used verbal description, explanation and demonstration form, repeated several times. The demonstrations were accompanied by clear verbal explanations, with emphasis on essential details of each technical element.

After the stage of learning, the students aware of the technical elements started their practice from the beginning at first without the ball, and then by using it.

At this stage, each item was intended to correct technical errors. Students enter the consolidation phase after growing sense and "spirit of the ball" observation, and the sense of distributive observation.

An ongoing concern was the formation of stimulating thinking and tactical skills of each student so that at the end of training, each component of the team could accurately and easily perform the following actions: passing the ball overhand, with two hands ahead and over the head, taking the ball from an underhand position, with two hands from a serve and from attack, an underhand serve from the front, and from the overhand in front, the attack and the individual blockage.

And that tactical actions:

- passing the ball in the opposite court, preceded by two hits;
- the settlement areas;
- arrangement on two lines in game 4x4 and statutory rotation;
- settlement to acquire the serve with the lifter in Zones 2 or 3;
- organization of the 3 shots.

The following able data are the resources for game development and dynamic driving qualities, selected and applied during the study.

Results and discussion:

The results obtained from the initial and the final testing of the two samples, namely the control and the experimental group were recorded in summary tables.

In Table. are listed the results obtained in the control group.

Table.1 Analysis of the results of the control group

| | | | The height of the jump | The movement | The underhand serve | The overhand serve | Taking over the ball from an underhand position |
|------------------------|---------------|-----------------------------------|------------------------|--------------|---------------------|--------------------|---|
| Initial testing | X | Average | 16.43 | 5.26 | 6.14 | 2.00 | 5.57 |
| | | Median | 16.00 | 5.25 | 6.00 | 2.00 | 5.50 |
| | | Minimum | 12.00 | 4.80 | 4.00 | 0.00 | 3.00 |
| | | Maximum | 22.00 | 6.00 | 9.00 | 4.00 | 8.00 |
| | S | Standard deviation | 3.13 | 0.30 | 1.61 | 1.18 | 1.69 |
| | Resume | Coefficient of variability | 19.06 | 5.84 | 26.21 | 53.66 | 30.49 |
| Final test | X | Average | 21.29 | 4.93 | 8.86 | 3.93 | 8.36 |
| | | Median | 21.50 | 5.00 | 9.00 | 4.00 | 8.50 |
| | | Minimum | 16.00 | 4.60 | 7.00 | 2.00 | 6.00 |
| | | Maximum | 29.00 | 5.30 | 10.00 | 6.00 | 10.00 |
| | S | Standard deviation | 4.07 | 0.22 | 1.03 | 1.27 | 1.39 |
| | Resume | Coefficient of variability | 18.62 | 6.14 | 21.16 | 38.21 | 14.79 |

The table shows obviously that the height of the jump from the place(detention), the first test was an arithmetic mean of 16.43 cm., and the second test has a value of 21, 29 cm. It appears, therefore, an improvement of 4.86 cm. The standard deviation from the first test was 3.13 and for the second test of 4.07. Coefficient of variation is between the limits of 19.06 to 18.62. Notice then, from the first to the second test group, increased group homogeneity.

The movements on the arithmetic average of 3 m., at the first test were 5.26 seconds, while the second test of 4.93 seconds, so there is an improvement of 0.33 hundredths.

The first test standard deviation was 0.30 to 0.22 in the second test, and the coefficient of variance shows a slight decrease in the group homogeneity from 5.84 to 6.14 while maintaining high uniformity, however, limited.

Regarding the underhand serve, out of 10 tests, for the first test the arithmetic mean was 6.14 and in the second test was 8.86 results increased by 2.72.

Regarding the overhand serve, the arithmetic mean is low and the standard deviation is between 1.18 and 1.27 and coefficient of variability registered between 53.66 and 38.21, a decrease of 15.45.

The arithmetic mean after taking the ball from an underhand position, the first test was 5.57 and for the second test at 8.36 and found an improvement of 2.79. The first test standard deviation was 1.69 and the second test of 1.39.

Note that the group homogeneity increased as demonstrated by the coefficient of variation which lies within the range of 30.49 to 14.79, making the transition from lack of uniformity in average homogeneity.

The results obtained for the experimental group are listed in Table 2.

Table 2 Analysis of results for the experimental group

| | | | The height of the jump | The movement | The underhand serve | The overhand serve | Taking over the ball from an underhand position |
|------------------------|---------------|-----------------------------------|------------------------|--------------|---------------------|--------------------|---|
| Initial testing | X | Average | 18.25 | 5.00 | 6.33 | 2.66 | 5.83 |
| | | Median | 18.25 | 5.00 | 6.50 | 3.00 | 6.00 |
| | | Minimum | 13.00 | 4.80 | 4.00 | 0.00 | 3.00 |
| | | Maximum | 23.00 | 5.40 | 9.00 | 6.00 | 10.00 |
| | S | Standard deviation | 3.07 | 0.30 | 1.61 | 1.77 | 2.51 |
| | Resume | Coefficient of variability | 16.67 | 6.16 | 25.48 | 66.57 | 43.14 |
| Final test | X | Average | 23.08 | 4.67 | 7.41 | 8.25 | 8.83 |
| | | Median | 23.00 | 4.75 | 7.50 | 8.00 | 9.00 |
| | | Minimum | 17.00 | 4.20 | 5.00 | 6.00 | 7.00 |
| | | Maximum | 30.00 | 5.10 | 10.00 | 10.00 | 10.00 |
| | S | Standard deviation | 3.72 | 0.30 | 1.37 | 1.35 | 1.02 |
| | Resume | Coefficient of variability | 16.15 | 6.45 | 28.59 | 16.44 | 11.65 |

In the case of the height of the jump from the place, there is an increase in the arithmetic average of the first test (18.25 cm.) at the second test (23 cm.).

The first test standard deviation was 3.07 and 3.72 in the second test, the coefficient of variation ranging between 16.67 and 16.15 with greater homogeneity.

Regarding the movements, there is an arithmetic average of the first test for 5 seconds and the second test of 4.67 seconds.

The first test standard deviation was 0.30, with a coefficient of variation of 16.16 and in the second test, the standard deviation of 0.30 was also changing the coefficient of variation of 6.45. It is noticed a greater homogeneity comparing to the first test.

In the case of the underhand serve, the standard deviation was 1.61 and the coefficient of variability 25.48 in the first test while second test standard deviation was 1.37, so the homogeneity of the groups increased, a fact demonstrated by the coefficient of variability.

An improvement is noticed for the overhand serve and the homogeneity found is increased.

In the case of taking over the ball from an underhand position, the standard deviation of 2.51 reached in the first test and the second test 1.02, and increased homogeneity of variance coefficient from 43.14 to 11.65.

Following the set, we found that the arithmetic mean final testing of the control group (for the class grade nine- A) for the height of the jump from the place, there was 21.29 cm. average obtained in the experimental group of the class grade nine-B, an improvement of 1.79 cm., which shows a good physical preparation in both groups.

The standard deviation from the control group, the final test was 4.07 and the coefficient of variation of 18.62 for the experimental group who received a standard deviation of 3.72 and a coefficient of variation of 16.15, which shows better homogeneity in the latter.

A certain degree of growth increase and a better homogeneity with the other group experiment evidence, reaching maximum, especially in the overhand serve.

Conclusions:

Volleyball specific training as existing in our school curriculum is easily achievable in specific conditions to any schools without special equipment.

The used structures and adjusted claims for the experimental group, simple and accessible, assured very quick assimilation patterns intermediate passing game and have facilitated the 6x6 game models.

Exercises with the ball, not the specific game structures were used in training for specific physical preparation or analytical correction of individual executions.

At the High School level may be developed and applied even during the lesson, intermediate models capable of acquiring competitive game 6x6 models, necessary to participate in competitions between High Schools.

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Les aspects d'améliorer la méthodologie d'implémentation du programme d'études, le volley-ball, le niveau de qualité, les classes de qualité neuf du collège

Résumé: Selon les exigences posantes jusqu'au niveau de chaque classe, il y a des modèles intermédiaires, qui sont en mesure de fournir la correction du modèle du jeu de volley-ball. Dans ce projet, nous avons comme une cible l'idée de la nécessité pour améliorer la méthodologie opérante pour accomplir le contenu de programme d'études. Nous avons proposé un modèle pour la qualité de classe de groupe neuf, en incluant un bagage optimal de techniques – la connaissance tactique exigée de la pratique de volley-ball.

Mots clés: la méthodologie, le programme d'études, le volley-ball

Aspecte privind îmbunătățirea metodologiei de aplicare a programei școlare, capitolul volei la nivelul clasei a IX-a

Rezumat: După cerințele modelării la nivelul fiecărei clase, există modele intermediare capabile să asigure însușirea modelului jocului competițional de volei. În această lucrare am pornit de la ideea necesității îmbunătățirii metodologiei de acționare, pentru realizarea conținutului programei școlare, în care am propus un model, care cuprinde un bagaj optim de cunoștințe tehnico – tactice, necesare practicării jocului de volei la nivel de liceal.

Cuvinte cheie: metodologie, programa școlară, volei

ANTHROPOMETRIC AND MOTRIC POTENTIAL OF HIGH SCHOOL STUDENTS IN RĂDĂUȚI TOWN

Lecturer PhD. Florin-Valentin Leuciuc – University "Ștefan cel Mare" of Suceava

Lecturer PhD. Florian Benedek – University "Ștefan cel Mare" of Suceava

Lecturer PhD. Jacek Sobon – Opole University of Technology

Summary: *Anthropometric and motric potential structure is dynamic, requiring careful research to determine its components and characteristics. After conducting this transverse experiment there has been found the real motric potential and anthropometric profile of high school students, and could thus establish a work program to eliminate gaps of somatic development and improve motric indicators.*

Key words: *potential, anthropometry, motric, high school*

Introduction

Anthropometric and motric potential structure is dynamic, requiring careful research to determine its components and characteristics. From this point of view, experts have intensively studied in order to exactly determine its content and features.

Material and method

Identifying anthropometric and motric profile of the high school student would help to optimize the Physical Education Curricula at this level and to adapt it to the motric potential and somatic development level of today's students.

The main goal is to shape the anthropometric and motric profile of the high school students.

Work tasks:

- Study experts' opinion regarding this topic;
- Establish the sample on which the reasearch will be performed;
- Test the subjects to determine the level of physical development and of motricity;
- Establish the research findings.

This work is based on a study of Radauti high school students during the 2009 – 2010 school year. Obtaining the necessary research data (anthropometric, motric) was made in April and May 2010. Research sample is composed of 583 high school students of which 376 boys and 207 girls. The breakdown by class is as follows:

| Class | Females | Male | Total |
|-------|---------|------|-------|
| IX | 63 | 103 | 166 |
| X | 58 | 106 | 164 |
| XI | 55 | 92 | 137 |
| XII | 31 | 75 | 106 |
| TOTAL | 207 | 376 | 583 |

In this research there have been established six indicators to be evaluated: 2 somatic indicators and 4 motric indicators.

To test somatic development we measured the standing height and weight using a mechanical scale.

To test the motric ability the students had to pass the following tests: 50 m running speed, standing

long jump, trunk lift in 30 seconds, hanging tractions (boys) and keeping the hang (girls).

Results

The data were ordered on high school classes, namely on sexes in order to be compared with those obtained in previous studies.

9th class, males

| Parameters | Height (cm) | Weight(kg) | Running speed 50 m (s) | Standing long jump (cm) | Trunk lift in 30 sec (no reps) | Tractions (no reps) |
|------------|-------------|------------|------------------------|-------------------------|--------------------------------|---------------------|
| X | 169.06 | 59.33 | 8.11 | 181.52 | 21.62 | 6.02 |
| Δ | 4.26 | 6.04 | 0.26 | 8.08 | 2.93 | 2.70 |

| | | | | | | |
|-----------------|------|-------|------|------|-------|-------|
| C.V. (%) | 2.52 | 10.19 | 3.21 | 4.45 | 13.54 | 44.81 |
|-----------------|------|-------|------|------|-------|-------|

10th class, male

| Parameters | Height (cm) | Weight(kg) | Running speed 50 m (s) | Standing long jump (cm) | Trunk lift in 30 sec (no reps) | Tractions (no reps) |
|-----------------|-------------|------------|------------------------|-------------------------|--------------------------------|---------------------|
| X | 171.49 | 62.67 | 8.01 | 184.23 | 22.08 | 7.04 |
| Δ | 8.52 | 11.10 | 0.26 | 9.20 | 2.52 | 3.43 |
| C.V. (%) | 4.97 | 17.72 | 3.19 | 5.00 | 11.39 | 48.73 |

11th class, male

| Parameters | Height (cm) | Weight(kg) | Running speed 50 m (s) | Standing long jump (cm) | Trunk lift in 30 sec (no reps) | Tractions (no reps) |
|-----------------|-------------|------------|------------------------|-------------------------|--------------------------------|---------------------|
| X | 171.95 | 63.37 | 7.95 | 185.12 | 22.55 | 8.93 |
| Δ | 6.97 | 7.26 | 0.45 | 8.55 | 2.27 | 4.57 |
| C.V. (%) | 4.05 | 11.46 | 5.65 | 4.62 | 10.06 | 51.11 |

12th class, male

| Parameters | Height (cm) | Weight (kg) | Running speed 50 m (s) | Standing long jump (cm) | Trunk lift in 30 sec (no reps) | Tractions (no reps) |
|-----------------|-------------|-------------|------------------------|-------------------------|--------------------------------|---------------------|
| X | 174.21 | 67.94 | 7.72 | 185.29 | 22.77 | 10.81 |
| Δ | 4.93 | 4.80 | 0.44 | 6.29 | 2.06 | 2.60 |
| C.V. (%) | 2.83 | 7.06 | 5.74 | 3.40 | 9.02 | 24.04 |

9th class, female

| Parameters | Height (cm) | Weight(kg) | Running speed 50 m (s) | Standing long jump (cm) | Trunk lift in 30 sec (no reps) | Keep hanging (no reps) |
|-----------------|-------------|------------|------------------------|-------------------------|--------------------------------|------------------------|
| X | 157.23 | 49.65 | 8.91 | 173.29 | 19.11 | 46.75 |
| Δ | 4.95 | 5.13 | 0.38 | 7.29 | 2.45 | 4.90 |
| C.V. (%) | 3.15 | 10.33 | 4.31 | 4.21 | 12.82 | 10.49 |

10th class, female

| Parameters | Height (cm) | Weight(kg) | Running speed 50 m (s) | Standing long jump (cm) | Trunk lift in 30 sec (no reps) | Keep hanging (no reps) |
|-----------------|-------------|------------|------------------------|-------------------------|--------------------------------|------------------------|
| X | 157.63 | 50.07 | 8.89 | 174.17 | 19.41 | 46.98 |
| Δ | 4.71 | 4.91 | 0.41 | 7.80 | 2.32 | 5.04 |
| C.V. (%) | 2.99 | 9.80 | 4.62 | 4.48 | 11.94 | 10.73 |

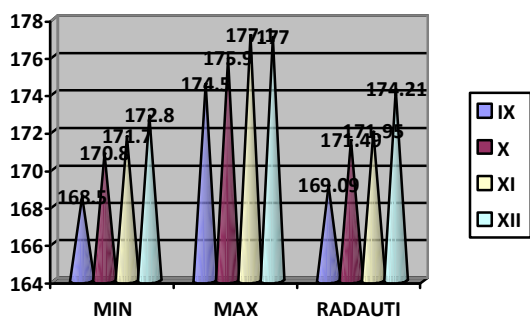
11th class, female

| Parameters | Height (cm) | Weight (kg) | Running speed 50 m (s) | Standing long jump (cm) | Trunk lift in 30 sec (no reps) | Keep hanging (no reps) |
|-----------------|-------------|-------------|------------------------|-------------------------|--------------------------------|------------------------|
| X | 158.02 | 50.31 | 8.90 | 174.49 | 19.53 | 47.15 |
| Δ | 4.52 | 4.85 | 0.42 | 7.90 | 2.38 | 5.17 |
| C.V. (%) | 2.86 | 9.63 | 4.71 | 4.53 | 12.18 | 10.97 |

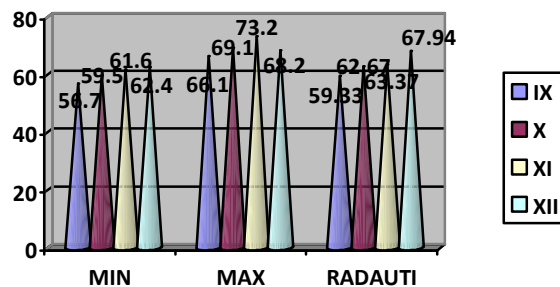
12th class, female

| Parameters | Height (cm) | Weight (kg) | Running speed 50 m (s) | Standing long jump (cm) | Trunk lift in 30 sec (no reps) | Keep hanging (no reps) |
|-----------------|-------------|-------------|------------------------|-------------------------|--------------------------------|------------------------|
| X | 155.77 | 48.35 | 8.74 | 177.35 | 20.19 | 48.58 |
| Δ | 4.04 | 4.62 | 0.42 | 9.21 | 2.55 | 4.79 |
| C.V. (%) | 2.59 | 9.56 | 4.82 | 5.19 | 12.62 | 9.87 |

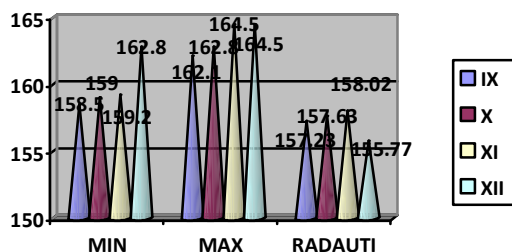
HEIGHT, MALE



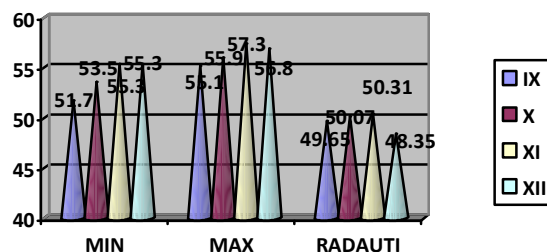
WEIGHT, MALE



HEIGHT, FEMALE



WEIGHT, FEMALE



For tests aiming at determining the motric potential, the results are as follows:

| Averages – Males | | | | |
|------------------|------------------------|-------------------------|---------------------------------------|---------------------|
| Class | Running speed 50 m (s) | Standing long jump (cm) | Lifting the trunk in 30 sec (no reps) | Tractions (no reps) |
| IX | 8.11 | 181.52 | 21.62 | 6.02 |
| X | 8.01 | 184.23 | 22.08 | 7.04 |
| XI | 7.95 | 185.12 | 22.55 | 8.93 |
| XII | 7.72 | 185.29 | 22.77 | 10.81 |

| Averages – Females | | | | |
|--------------------|------------------------|-------------------------|---------------------------------------|------------------------|
| Class | Running speed 50 m (s) | Standing long jump (cm) | Lifting the trunk in 30 sec (no reps) | Keep hanging (no reps) |
| IX | 8.91 | 173.29 | 19.11 | 46.75 |
| X | 8.89 | 174.17 | 19.41 | 46.98 |
| XI | 8.90 | 174.49 | 19.53 | 47.15 |
| XII | 8.74 | 177.35 | 20.19 | 48.58 |

Discussions

After conducting this transverse experiment there has been found the real motric potential and anthropometric profile of high school students, and could thus establish a work program to eliminate gaps of somatic development and improve motric indicators.

Following measurements and analysis of all these indicators we can say that the motric and somatic potential of Rădăuți high school students are within the margin of previous studies for males, namely below the minimum values obtained for females.

Anthropometric data indicate values comparable to those achieved in previous studies for boys, and below this level for girls. Results and calculation of body mass index indicated overweight trends confirmed by calculating body mass index compared to previous studies.

For the results of motric tests, the data showed low values indicating low performance, mostly contained within grades 5-7.

In physical education lessons it should be kept in mind that the growth process is completed for girls but for boys is nearing completion.

This research has shown that it is essential that the objectives of physical education teaching in high school should be tailored to students' motric potential, which according to our study is in decline and a tendency toward overweight students (BMI - 25 points).

The limited aspect of the study is the fact it was performed locally when most data from previous studies are conducted at national level, in our case the number of subjects being 583.

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Le potentiel anthropométrique et motrice des lycéens de Rădăuți

Résumé: Le potentiel anthropométrique et motrice est caractérisé par une structure dynamique qui exige une recherche approfondie pour déterminer ses composants et ses caractéristiques structure est dynamique, exigeant des recherches approfondies pour déterminer les composants et les caractéristiques. Avec cette expérience, on a été constaté le réel niveau du potentiel motrice et celui du profil anthropométrique des élèves du secondaire, et on pourrait donc mettre en place un programme de travail pour éliminer les lacunes du développement physique et améliorer les indicateurs motrices.

Mots-clés: potentiels, l'anthropométrie, la motricité, lycée

Potențialul antropometric și motric al elevilor de liceu din Municipiul Rădăuți

Rezumat: Potențialul antropometric și motric are o structură dinamică, necesitând o cercetare atentă pentru stabilirea componentelor și caracteristicilor. În urma desfășurării acestui experiment transversal s-a constatat nivelul real al potențialului motric și profilul antropometric al elevilor din ciclul liceal, putându-se astfel stabili un program de lucru în vederea eliminării carențelor privind dezvoltarea somatică și îmbunătățirea indicatorilor motrici.

Cuvinte cheie: potențial, antropometrie, motricitate, liceu

GROWTH INDICES OF DEVELOPMENT FOR THE DRIVING QUALITIES SPECIFIC FOR THE HANDBALL GAME, BY SPECIFIC ATHLETICS MEANS, OF THE JUNIOR III ECHELON

Asistent univ. Cicma Ioan Teodor

Abstract: This paper demonstrate by means of a well structured and organized experiment, efficiency relying upon specific athletic means training, in the physical training for growth indices of development for driving qualities of the Junior III echelon handball players.

Keywords: handball, development indices, motor skills, athletics

The handball game, is a relatively young sport having evolved in Europe towards the end of the 19th century and the early 20th.

But his roots are much deeper such as certain games of a popular character practised during the Middle Ages and the dynamic games used in Central and Northern Europe Schools in the early 19th century.

All these main sources merged and upgraded under the influence of different sportive performances of basketball, rugby, football, already acknowledged regarding their competitive status.

Assuming all its variants, the handball game seems to have appeared first as a school teaching material, arising as a result of strong creative imagination of eminent professors of physical education.

For all such categories, studies and continuous attempts are carried out to find and apply most effective ways, means and methodologies for the instructional objectives and tasks to achieve each echelon formative educational characteristics at the optimal level.

The handball game is a harmonious blend of natural movements (running, Jumping, throwing), on the one side, and skills and motor skills, simple, attractive and accessible, on the other side.

At the same time, the handball game usually takes place against a background of intense psychical and physical demands bearing a strong formative-educational character upon the students personalities.

A scientifically rooted handball game, bears a beneficial impact upon the general health condition developing comprehensive mental and physical abilities meant for the acquisition of technical and tactical game knowledge as well as of the necessary motric skills.

For that purpose, a new game conception, corresponding to the increasing demands of the global handball elite, has evolved and developed being constantly and regularly improved, updated and refined up to a high level of competitiveness.

As a scientific discipline, it studies the game content in terms of trends, according to the technique, tactics, physical training, theoretical and psychological development, promoting the best team practice, analysing, the game evolution historically, making connections to other sports games, throwing their training methods, technical and tactical means of methods, adapting to their specific or sharing, what they have in common, with other scientific disciplines directly involved in practising such sports games as hygiene, sports physiology, anatomy and biomechanics, biochemistry, pedagogy, psychology or the like.

We can say that the main handball game features are freedom of action within the limitations of space and time, effort and pleasure, the requirement for developing handball player, moral qualities will discipline, sense of duty, spirit of cooperation, even the

coaches, the referees and fast but not least, the public, are to be taken into account.

As a performance sport, the handball game, requires its participants an intense work to cope with the task of training very hard under the maximum strain of their physical abilities and not in the least, their moral and intellectual desire.

To achieve the objectives of this experiment, i formulated the following hypotheses which i set out to demonstrate:

-- If the periodization action, planned for the preparation of junior children, is well streamlined and standardized, it can lead to creating pre-requisites to obtain an increased in the development of the indices, specific for the motric qualities of a handball game;

-- If the means proposed, selected and implemented, leading to a very significant growth, of the development indices of motric qualities, specific for the handball game are checked and verified by the proposed control samples, their values proposed by the F.R.H.;

-- In the preparation of the junior children, is carried out performed scientifically it may lead to a fairly harmonious physical development and to an increase of the development indices for the motric qualities.

Physical training, is the process of education of physical skills, or motor qualities of the handball players developing all organs and bodily functions.

Physical preparation of the handball players, involves two aspects, namely general physical preparation and special physical preparation.

General physical preparation training as a practical concern is meant to ensure the human body best working ability under physical effort condition, achieving high performance in the case of those players having developed.

General physical preparation enhances different forms of development from one branch of sport to another as far as the motric qualities are concerned as well as the general physical development.

Special physical training, is an education process, bearing on the physical skill development necessary in the handball game.

Special physical training, can not compensate the lack of general physical training, and it aims to ensure the needed players qualities, for dealing with the specific requirements in managing speed and force as physical skills enhancing physical resistance.

The two sides of the physical training, are closely connected being interdependent.

The practical training is supposed to develop the future handball players motor skills during their preparatory periods or maintain and improve their skills during the competitive periods.

We carried out our experiment as a professor of the assumptions formulated, in Brăila Sports High School, after the school board and the handball chair members had agreed in advance upon our activity.

I made the choice of a set of measurements and tests revealing the actual abilities of the athletes under experiment, most eloquently justifying our experiment hypotheses and assessing the increasing performance

level features bearing on the handball game fundamental elements as compared with other somatic and motric models of the same age established and developed by F.R.H.

Nominal table with the values obtained as a result of anthropometric measurements.

Tabel nr. 1

| Run. | Surname and Christian name | DATE OF BIRTH | WAIST (cm) | WEIGHT (kg) |
|-----------|----------------------------|---------------|------------|-------------|
| 1 | Manea Cristian | 1995 | 183 | 66 |
| 2 | Popescu Alin | 1995 | 192 | 68 |
| 3 | Sarcă Florin | 1995 | 178 | 65 |
| 4 | Strungariu Paul | 1995 | 168 | 60 |
| 5 | Trică Mădălin | 1995 | 178 | 70 |
| 6 | Frăţilă Ionuţ | 1994 | 183 | 75 |
| 7 | Buga Adrian | 1994 | 187 | 80 |
| 8 | Brânză Georgian | 1995 | 172 | 65 |
| 9 | Boboc Cristian. | 1995 | 168 | 60 |
| 10 | Zamfir Ionuţ | 1995 | 172 | 65 |
| 11 | Balaban Ionuţ | 1995 | 173 | 63 |
| 12 | Dogărescu Marius | 1994 | 188 | 75 |

Table with initials and final results of the motor-technical tests, reported of a reference values established by F.R.H.

Table nr. 2

| Run. | Surname and Christian name | Run speed 30m (sec) | | | Ten steps jump 20m (m) | | | Dribble throught cones 30 m (sec) | | | Standing long jump (m) | | | Handball ball throwing (m) | | | Resistance running 1000m (min, sec) | | |
|------------------------|----------------------------|---------------------|----------------|----------------|------------------------|----------------|----------------|-----------------------------------|----------------|----------------|------------------------|----------------|----------------|----------------------------|----------------|----------------|-------------------------------------|----------------|----------------|
| | | T _i | T _f | V _R | T _i | T _f | V _R | T _i | T _f | V _R | T _i | T _f | V _R | T _i | T _f | V _R | T _i | T _f | V _R |
| 1 | Manea Cristian | 4,7 | 4,6 | 4,3 | 19 | 21 | 20 | 7.8 | 7.6 | 7.3 | 2,18 | 2,22 | 2,20 | 22 | 23 | 25 | 4'30', | 4'25', | 4'20', |
| 2 | Popescu Alin | 4,8 | 4,6 | 4,3 | 20 | 20 | 20 | 7.5 | 7.5 | 7.3 | 2,22 | 2,20 | 2,20 | 21 | 22,5 | 25 | 4'50', | 4'40', | 4'20', |
| 3 | Sarcă Florin | 4,3 | 4,3 | 4,3 | 18 | 19 | 20 | 7.6 | 7.4 | 7.3 | 2,10 | 2,15 | 2,20 | 20 | 21,5 | 25 | 4'40', | 4'40', | 4'20', |
| 4 | Strungariu Paul | 5,2 | 4,9 | 4,3 | 22 | 22 | 20 | 7.9 | 7.5 | 7.3 | 2,05 | 2,15 | 2,20 | 23 | 23 | 25 | 4'20', | 4'20', | 4'20', |
| 5 | Trică Mădălin | 4,7 | 4,5 | 4,3 | 17,5 | 18,5 | 20 | 8.1 | 7.7 | 7.3 | 1,95 | 2,00 | 2,20 | 22,5 | 23 | 25 | 4'40', | 4'35', | 4'20', |
| 6 | Frățilă Ionuț | 4,8 | 4,7 | 4,3 | 18,5 | 19,5 | 20 | 7.7 | 7.4 | 7.3 | 1,90 | 1,95 | 2,20 | 21,5 | 22 | 25 | 5', | 4'45', | 4'20', |
| 7 | Buga Adrian | 4,5 | 4,5 | 4,3 | 21 | 22 | 20 | 8.2 | 7.8 | 7.3 | 2,00 | 2,00 | 2,20 | 26 | 26 | 25 | 4'35', | 4'30', | 4'20', |
| 8 | Brânză Georgian | 4,7 | 4,6 | 4,3 | 20 | 21 | 20 | 7.4 | 7.2 | 7.3 | 2,15 | 2,18 | 2,20 | 24,5 | 25 | 25 | 4'10', | 4'10', | 4'20', |
| 9 | Boboc Cristian. | 5,0 | 4,9 | 4,3 | 18 | 19 | 20 | 7.6 | 7.4 | 7.3 | 2,00 | 2,08 | 2,20 | 22,5 | 23,5 | 25 | 4'45', | 4'40', | 4'20', |
| 10 | Zamfir Ionuț | 4,8 | 4,7 | 4,3 | 17,5 | 18,5 | 20 | 7.9 | 7.7 | 7.3 | 1,90 | 1,94 | 2,20 | 21,5 | 22 | 25 | 4'25', | 4'20', | 4'20', |
| 11 | Balaban Ionuț | 5,1 | 4,9 | 4,3 | 17 | 19 | 20 | 8.0 | 7.8 | 7.3 | 2,10 | 2,14 | 2,20 | 26 | 27 | 25 | 4'15', | 4'10', | 4'20', |
| 12 | Dogărescu Marius | 4,4 | 4,5 | 4,3 | 18 | 18 | 20 | 7.5 | 7.5 | 7.3 | 2,25 | 2,30 | 2,20 | 23 | 24,5 | 25 | 4'45', | 4'30', | 4'20', |
| Statistical indicators | \bar{X} | 4.7 5 | 4.6 4 | — | 18,8 7 | 19,79 | — | 7,76 | 7,54 | — | 2,06 | 2,11 | — | 22,79 | 23,58 | — | 4,35 | 4,30 | — |
| | S ± | 0.2 4 | 0.1 8 | — | 1,55 | 1,38 | — | 0,25 | 0,18 | — | 0,12 | 0,11 | — | 1,87 | 1,70 | — | 0,15 | 0,12 | — |
| | Cv | 5.1 8 | 4.0 5 | — | 8,23 | 7,02 | — | 3,31 | 2,42 | — | 5,79 | 5,46 | — | 8,32 | 7.22 | — | 3,44 | 2,78 | — |
| | P | 0.11 | | — | 0.92 | | — | 0.21 | | — | 0.05 | | — | 0.79 | | — | 0.05 | | — |

Somatic measurements ensemble and motor and technical tests used to verify the experiment hypotheses, were composed of:

A. Anthropometric measurements: height, scale, length of palm;

B. Motor and technical tests:

-- standing jump in length (S.L.L.);

-- running on speed on the distance of 30 meters;

-- throw the handball ball away, with three steps impetus (A.M.H.);

-- ten-jump (minimum 20 meters);

-- dribbling among milestones;

-- running of resistance 1000 meters distance.

The means used, were chosen, selected, quantified and then applied, both in relation to the features of the athletes of this age as and in relation to the objectives proposed at this level.

The research revealed has that analysing and systematizing the means of preparing to increase the indices of development of specific motor qualities of the handball game, proved to be effective and specific athletics means, proposed.

Also, the research has shown the fact that in approach of the handball players preparation at this echelon, programming and planning of training activity, should be effectuated only after a knowledge of players collective with that working, and only after a personal specific preparation, prior, legally theoretically and scientific profound grounded.

The hypotheses proposed to be verified and demonstrated have been validated, development indices of specific motor qualities of the handball game, have increased results obtained in control samples showing this thing.

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Croissance des l'indics de développement, des les qualités motrique, spécifique au jeu de handball, grâce a les milieux spécifiques de l'athlétisme, a l'échelon, juniors III

Résumé: Cet ouvrage, démontre avec un expériment bien structuré et organisé, l'efficacité des moyens de préparation de l'athlétisme, dans la préparation physique de les joueurs de handball, á l'échelon Juniors III.

Mots clés: handball, développement, indices, qualités motriques, l'athlétisme

Evoluția indicilor de dezvoltare a calităților motrice specifice jocului de handbal prin utilizarea mijloacelor specifice atletismului în eșaloanele de juniori III

Rezumat: Prezenta lucrare demonstrează printr-un experiment bine structurat și organizat, eficiența mijloacelor de pregătire din atletism, în pregătirea fizică a jucătorilor de handbal de la eșalonul Juniors III.

Cuvinte cheie: handbal, dezvoltare, indici, calități motrice, atletism

BIOMECHANICS OF MUSCLES ACTIVITY DURING REVERSE PUNCH

Elena Mereuță, Liliana Gabriela Ionete, Claudiu Mereuță
“Dunarea de Jos” University of Galati, Romania
emereuta@ugal.ro, gciubucciu@ugal.ro, cmereuta@ugal.ro

Abstract: The paper presents an experimental study on the behavior of six muscles of the arm and forearm while performing a reverse punch technique, using electromyography (EMG). The information provided by this test is useful for the appraisal on the

relationship between neural control and muscle mechanics. Comparisons between two situations are analyzed, for both magnitude of muscle force and its mechanical work.

Key-words: EMG, muscles activity, reverse punch

Introduction

Biomechanics of muscles and joints is distinctive within the general biomechanics, because of the complexity of muscles and joints that connect them. Studies in this area allow obtaining valuable information, particularly important with regard to:

- the passive characteristics of muscle (mass, elasticity, viscosity);
- the characteristics of the joints;
- the differences in muscle activity during lengthening and shortening;
- the influence on blood neural muscle recruitment etc.

Final evaluation of many movements cannot ignore either the influence of active and passive characteristics of muscle or the passive role in stabilizing the joint surfaces and limitation of motion.

Electromyography (EMG) provides information on the relationship between neural control and muscle mechanics.

Electromyographical signal is the primary signal for entry the muscular system. It enables the muscles responsible for a certain muscle momentum as well as the presence of the antagonistic activity.

The EMG can emphasize the recruitment of different muscle fiber types and allows the analysis of fatigue in muscle. Information gained with this type of analysis allows the development of biomechanical models of muscle.

Muscle forces and EMG

In order to calculate the force developed by muscle action, it would be necessary to know the geometry, the shape and the cross-section of muscles.

The physiological area of muscles represents in fact the number of sarcoma parallel to the stretch angle of muscles.

The fibers of pinnate muscles act with an angle from the longitudinal axis and that's the reason for a

smaller efficiency of that type of muscle to the muscles with parallel fibers.

The physiological area can be calculated using formula (1) for the muscles with parallel fibers and formula (2) for the pinnate muscles.

$$A = \frac{m}{d \cdot l} \quad [\text{cm}^2] \quad (1)$$

$$A = \frac{m}{d \cdot l} \cdot \cos \theta \quad [\text{cm}^2] \quad (2)$$

where: m is the mass of muscles fibers [g];

d is the density of muscles [g/cm^3];

$d=1,056\text{g}/\text{cm}^3$;

l is the length of muscle [cm].

θ is the pinnate angle which is in inverse ratio to the length variation of muscle.

That method can be used to determine the potential contribution of a muscle or a group of muscles to a certain action. As for the tension in muscles, the literature provides a large range of values, from 20 to 100 N/cm^2 . This fact, together with a variable velocity of muscles in action, renders difficult to express the muscular mechanical work and the muscular mechanical power.

Electromyography (EMG) test is used for recording electrical activity of muscles. When muscles are active, they produce electric pulses directly proportional to the level of muscle activity.

In our experimental study EMG was used for measuring the activity of 6 muscles of arm and forearm involved in reverse punch technique, during a series of 10 strikes with and without hitting a target.

Experimental results

The experiments were conducted in Stuttgart laboratories, a single athlete, female, was monitored and filmed while executing 10 reverse punches, with and without hitting a target.

A group of markers were placed on her arm and forearm, in order to get the activity of 6 muscles with respect to time variable (fig.1).



Fig.1 – Markers positioning on arm and forearm

This paper aims to analyze electrical tension in most important muscles involved in a reverse punch, in two cases: with and without hitting a target.

Thus, an athlete, a black belt holder, will perform 10 reverse punches, considering the proper technique.

Some assumptions were taken into account for the experiment, namely:

- the human body is considered as a kinematic chain with rigid solids;

- the joints between pairs are ideal, meaning that they allow relative motion without friction.

All data were collected in a computer for further interpretations and analyses.

In figure 2, the diagrams of the signals processed from muscles are revealed, together with a bar diagram of the instant values of electrical tensions in muscles, at a given moment which is the maximum development of muscle for the sixth punch (fig.3). This is the case corresponding to the situation in which the target is not hit by the athlete's fist.

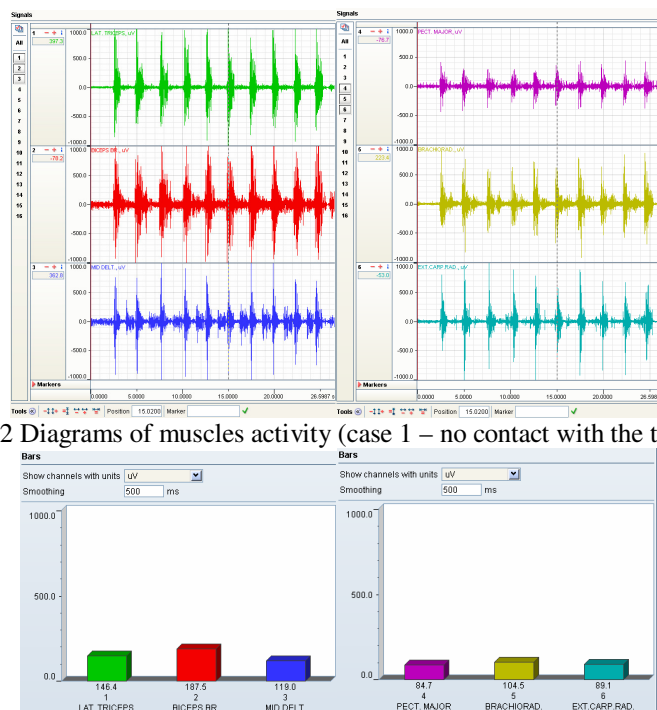


Fig.2 Diagrams of muscles activity (case 1 – no contact with the target)

Fig.3 Instant values of muscles activity (case 1 – no contact with the target)

In figure 4 we can also see the diagrams of the signals processed from muscles, together with a bar diagram of the instant values of electrical tensions in muscles, at a given moment which is the maximum development of muscle for the sixth punch (fig.5). This is the case corresponding to the situation in which the target is hit by the athlete's fist.

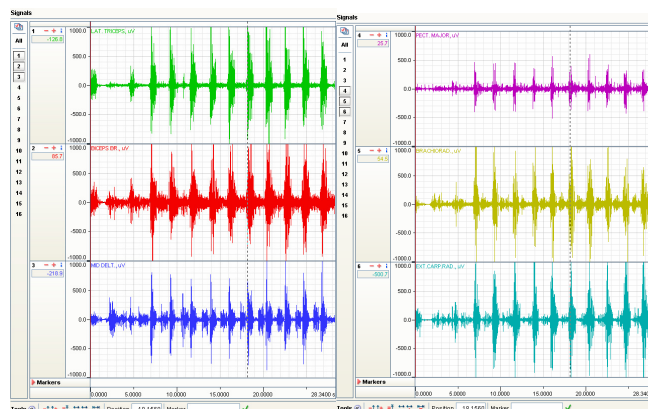


Fig.4 Diagrams of muscles activity (case 2 – contact with the target)

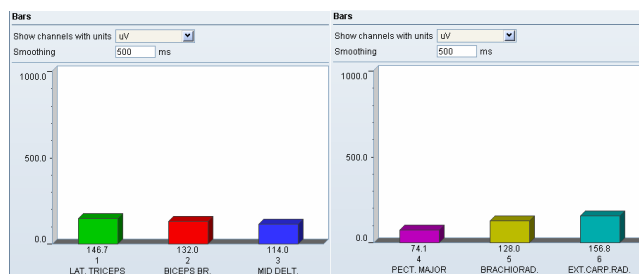


Fig.5 Instant values of muscles activity (case 2 – contact with the target)

The MyoResearch application allows comparisons between two testing protocols, that provide information about the magnitude of the muscle force, the reaction time (fig. 6), the mean of each period (fig. 7

a), the area of each period (fig.7 b), the average or mean of all periods (fig.8a) and the average area of all periods (fig.8b), considering both situations (with and without contact to the target), for all considered muscles.

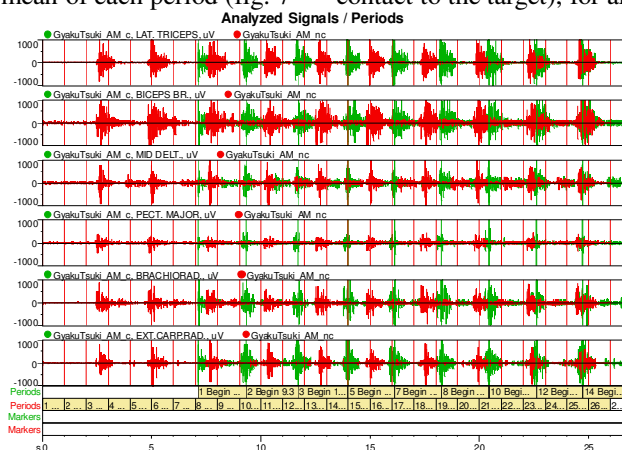


Fig.6 The magnitude of the muscle force

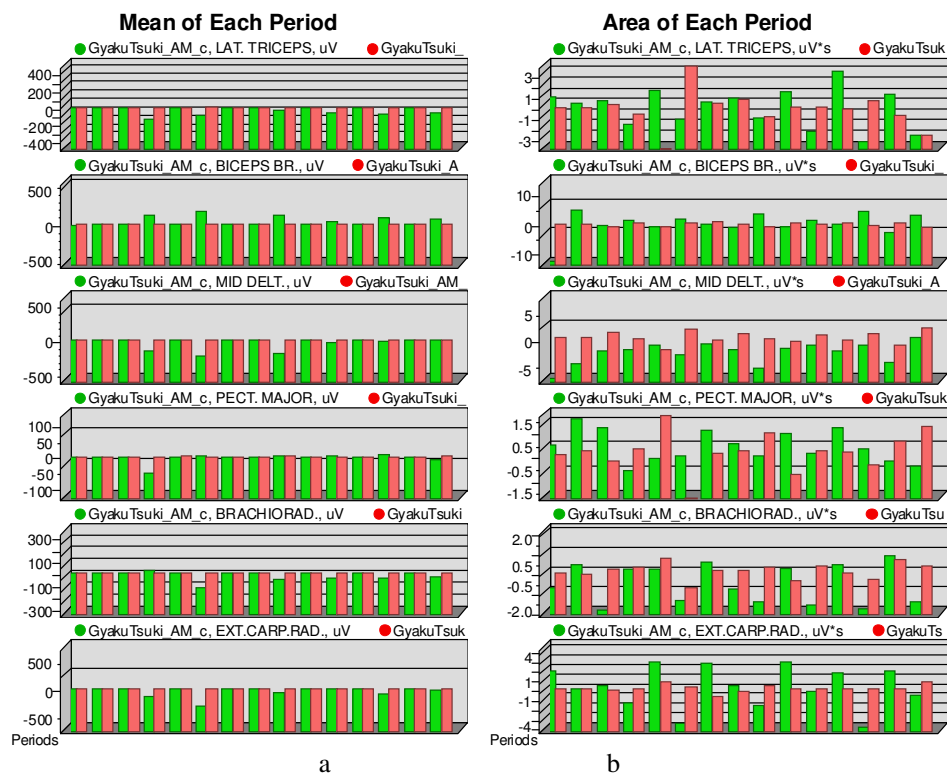


Fig.7 Comparative data for two protocols for each period

Averaged Mean Amplitude of All Periods

| Channel | Mean, uV |
|----------------------------------|-------------|
| GyakuTsuki_AM_c, MID DELT., uV | -40.3±75.5 |
| GyakuTsuki_AM_nc | 0.493±0.964 |
| GyakuTsuki_AM_c, PECT. MAJOR, uV | -2.69±13.1 |
| GyakuTsuki_AM_nc | 0.2±0.755 |

Averaged Mean Amplitude of All Periods

| Channel | Mean, uV |
|----------------------------------|-------------|
| GyakuTsuki_AM_c, MID DELT., uV | -40.3±75.5 |
| GyakuTsuki_AM_nc | 0.493±0.964 |
| GyakuTsuki_AM_c, PECT. MAJOR, uV | -2.69±13.1 |
| GyakuTsuki_AM_nc | 0.2±0.755 |

Averaged Mean Amplitude of All Periods

| Channel | Mean, uV |
|------------------------------------|--------------|
| GyakuTsuki_AM_c, BRACHIORAD., uV | -17.9±33.7 |
| GyakuTsuki_AM_nc | 0.123±0.369 |
| GyakuTsuki_AM_c, EXT.CARP.RAD., uV | -38.5±79.9 |
| GyakuTsuki_AM_nc | 0.0755±0.346 |

a

Averaged Area of All Periods

| Channel | Mean, uV*s |
|------------------------------------|-------------|
| GyakuTsuki_AM_c, MID DELT., uV*s | -2.3±1.94 |
| GyakuTsuki_AM_nc | 0.493±0.964 |
| GyakuTsuki_AM_c, PECT. MAJOR, uV*s | 0.43±0.63 |
| GyakuTsuki_AM_nc | 0.2±0.755 |

Averaged Area of All Periods

| Channel | Mean, uV*s |
|------------------------------------|-------------|
| GyakuTsuki_AM_c, MID DELT., uV*s | -2.3±1.94 |
| GyakuTsuki_AM_nc | 0.493±0.964 |
| GyakuTsuki_AM_c, PECT. MAJOR, uV*s | 0.43±0.63 |
| GyakuTsuki_AM_nc | 0.2±0.755 |

Averaged Area of All Periods

| Channel | Mean, uV*s |
|--------------------------------------|--------------|
| GyakuTsuki_AM_c, BRACHIORAD., uV*s | -0.54±0.961 |
| GyakuTsuki_AM_nc | 0.123±0.369 |
| GyakuTsuki_AM_c, EXT.CARP.RAD., uV*s | 0.262±2.1 |
| GyakuTsuki_AM_nc | 0.0755±0.346 |

b

Fig.8 Comparative data for two protocols (all periods)

Conclusions

The EMG analysis provides information on muscles activity while performing a reverse punch. We can notice that there are difference regarding the moment of action for each monitored muscle. We can also notice that the means of each period, for every muscle are quite similar, while the mechanical work is very different.

As for the mean amplitude of all periods, we can conclude that there are major differences for the same muscle acting in two different situations: first a reverse punch is performed and the fist is not in contact with the and second, the fist touches the target.

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Biomécanique de l'activité des muscles pendant le punch inverse

Résumé: Cet article présente une étude expérimentale sur le comportement de six muscles du bras et l'avant-bras lors de l'exécution d'une technique punch inverse, en utilisant l'électromyographie (EMG). Les informations fournies par ce test est utile pour l'évaluation sur la relation entre le contrôle de neurones et de la mécanique musculaire. Les comparaisons entre les deux situations sont analysées, à la fois l'ampleur de la force musculaire et le travail mécanique.

Mots-clés: EMG, l'activité des muscles, punch inverse

Biomechanica activității musculare în lovitura de karate

Rezumat: Lucrarea prezintă un studiu experimental asupra comportamentului a șase mușchi ai brațului și ai antebrăului atunci când se execută o tehnică de karate (Gyaku-Tsuki), folosind electromiografia (EMG). Informațiile oferite de acest test sunt utile pentru a evalua relația dintre controlul neural și mecanica musculară. Sunt analizate comparativ cele două situații, atât în ceea ce privește magnitudinea forței cât și lucrul mecanic produs de aceasta.

Cuvinte cheie: EMG, activitate musculară, karate

VIRTUAL MODEL FOR KINEMATICS OF LOWER LIMB OF AN ATHLETE PERFORMING LONG JUMP

Elena Mereuță, Claudiu Mereuță

"Dunarea de Jos" University of Galati, Romania
emereuta@ugal.ro, cmereuta@ugal.ro

Abstract: The paper presents the virtual model for the motion of an athlete performing long jump while he loses the contact with ground. The athlete's lower limb is considered a kinematic linkage with pin joints as kinematic coupling. Animations and measurements on virtual model are performed using Working Model 2D software.

Key-words: lower limb kinematics, long jump, WM 2D

Introduction

Working model is an application specially developed to simulate planar mechanical structures and to perform complex analysis for models that are close to the real ones.

WM 2D provides features for modeling rigid bodies with different shapes (circle, box, polygon and spline curves), for assignation of mechanical properties like mass, density, geometry, center of mass, moment of

inertia, velocity and angular, velocity, electrostatic charge and more, tracking the motion path of a body, automatic collision detection and response as well as automatically applied static and kinetic friction.

The rigid bodies are connected by constraints like pins, rigid, slots, keyed slot and curved slot joints, rods, ropes, pulleys and gears, linear and rotational spring/damper.

For the input motion as well as for the external forces and torques, there is the possibility to insert motor drivers like: angular and linear motors, actuators, external forces and torques.

Long jump

The standing jump is a preparatory exercise for the hitch-kick style long jump. The virtual model follows the lower limb position during flight and detachment as well as the kinematics of elements that are components of the equivalent mechanical structure. The purpose of this study is to highlight the optimal

parameters that an athlete can reach, as the mechanical characteristics of those solids are widely adjustable.

Construction of virtual model

The first step in virtual model building consists of generating the rigid bodies that compose the human linkage (fig.1). Thus, regarding the anatomical data, we create the bodies that will be the components of the equivalent mechanical structure. We assign to these bodies some mechanical characteristics like: initial position, initial velocity, mass, density etc.

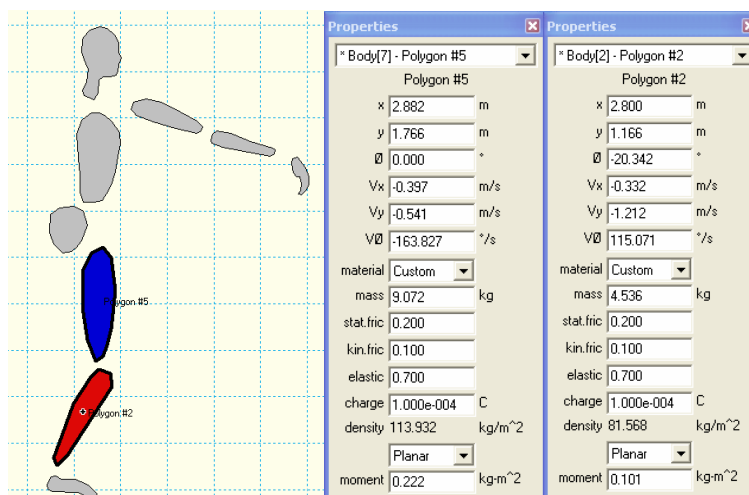


Fig.1 – Modeling the rigid bodies

Second step consists of connecting the bodies, thus diminishing the possibilities of motion. Rotational joints are used, because they allow only relative rotation of bodies and no translation. Their properties can be also defined by user (fig.2)

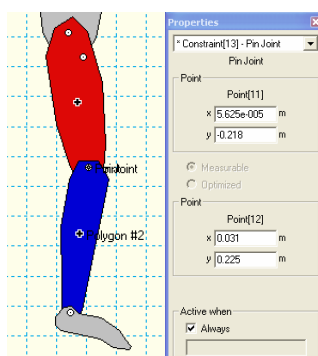


Fig. 2 Pin joint construction and properties

The third step consists of running the simulation after stating precisely the input data, which can be easily modified in order to get data for all the

events. The tracks can be visualized (fig. 3) and they can provide information on the input data which will render a more realistic motion.

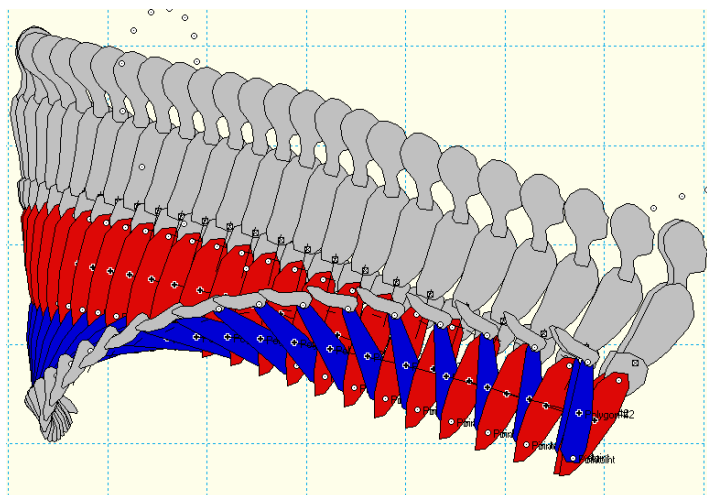


Fig. 3 Tracks of motions

Numerical results

After running the simulation, the desired characteristics of rigid bodies can be used to perform different analysis. Thus, we have collected the positions, the velocities and the accelerations of the leg

and of the thigh, together with the kinetic and rotational energy of the thigh.

For the thigh, the results are shown in table 1, and the diagrams in fig. 4.

Table 1 – The positions, velocities and accelerations of the thigh's center of gravity

| Positions | | | | Velocities | | | | Accelerations | | | |
|-----------|--------|-------|---------|----------------|----------------|-------|----------------|----------------|----------------|--------|----------------|
| t | x | y | rot | V _x | V _y | V | V _θ | A _x | A _y | A | A _θ |
| 0 | -0.851 | 2.773 | 9 | -0.397 | -0.541 | 0.671 | 0 | 88.605 | 19.13 | 90.647 | 6.19E+04 |
| 0.032 | -0.862 | 2.771 | 5.708 | -0.188 | -0.148 | 0.239 | -107.517 | 9.29 | -4.535 | 10.338 | -440.555 |
| 0.064 | -0.862 | 2.764 | 2.088 | 0.133 | -0.264 | 0.295 | -120.734 | 9.108 | -1.626 | 9.252 | -531.398 |
| 0.096 | -0.853 | 2.755 | -2.026 | 0.436 | -0.276 | 0.516 | -135.409 | 9.943 | 0.664 | 9.966 | -348.589 |
| 0.128 | -0.826 | 2.742 | -4.841 | 1.041 | -0.418 | 1.122 | -85.003 | 11.13 | -1.42 | 11.22 | -59.224 |
| 0.16 | -0.787 | 2.728 | -7.567 | 1.409 | -0.463 | 1.483 | -84.822 | 11.588 | -1.204 | 11.65 | 42.828 |
| 0.192 | -0.736 | 2.713 | -10.247 | 1.782 | -0.498 | 1.851 | -82.278 | 11.76 | -1.041 | 11.806 | 117.053 |
| 0.224 | -0.673 | 2.696 | -12.795 | 2.163 | -0.53 | 2.227 | -75.991 | 11.807 | -1.162 | 11.864 | 221.932 |
| 0.256 | -0.598 | 2.679 | -15.1 | 2.537 | -0.568 | 2.6 | -67.641 | 11.56 | -1.242 | 11.627 | 304.198 |
| 0.288 | -0.511 | 2.66 | -17.092 | 2.9 | -0.61 | 2.963 | -56.305 | 11.034 | -1.427 | 11.126 | 406.442 |
| 0.32 | -0.413 | 2.64 | -18.667 | 3.239 | -0.661 | 3.306 | -41.566 | 10.143 | -1.795 | 10.3 | 514.263 |
| 0.352 | -0.304 | 2.618 | -19.714 | 3.547 | -0.73 | 3.621 | -23.11 | 9.059 | -2.588 | 9.422 | 648.984 |
| 0.384 | -0.186 | 2.593 | -20.102 | 3.816 | -0.83 | 3.905 | -0.724 | 7.695 | -3.725 | 8.549 | 731.421 |
| 0.416 | -0.06 | 2.564 | -19.755 | 4.036 | -0.97 | 4.151 | 22.072 | 6.038 | -5.014 | 7.848 | 657.942 |
| 0.448 | 0.072 | 2.53 | -18.757 | 4.2 | -1.149 | 4.355 | 38.466 | 4.234 | -6.107 | 7.431 | 313.655 |
| 0.48 | 0.208 | 2.49 | -17.463 | 4.31 | -1.351 | 4.516 | 39.038 | 2.706 | -6.246 | 6.807 | -308.409 |
| 0.512 | 0.347 | 2.444 | -16.486 | 4.384 | -1.532 | 4.644 | 18.706 | 2.168 | -4.823 | 5.288 | -918.913 |
| 0.544 | 0.489 | 2.393 | -16.414 | 4.464 | -1.649 | 4.759 | -15.327 | 3.033 | -2.468 | 3.91 | -1134.82 |
| 0.576 | 0.633 | 2.339 | -17.473 | 4.589 | -1.692 | 4.891 | -50.098 | 4.879 | -0.313 | 4.889 | -995.061 |
| 0.608 | 0.786 | 2.282 | -18.645 | 4.874 | -1.804 | 5.197 | -44.46 | 7.433 | -1.029 | 7.504 | -480.254 |
| 0.64 | 0.946 | 2.224 | -20.278 | 5.136 | -1.83 | 5.453 | -56.493 | 8.895 | -0.724 | 8.924 | -273.109 |
| 0.672 | 1.115 | 2.165 | -22.193 | 5.44 | -1.855 | 5.747 | -62.258 | 9.98 | -0.89 | 10.02 | -93.933 |
| 0.704 | 1.294 | 2.105 | -24.209 | 5.77 | -1.889 | 6.072 | -63.094 | 10.602 | -1.249 | 10.675 | 32.186 |
| 0.736 | 1.484 | 2.044 | -26.197 | 6.115 | -1.935 | 6.414 | -60.701 | 10.903 | -1.623 | 11.023 | 110.853 |
| 0.768 | 1.686 | 1.981 | -28.073 | 6.466 | -1.992 | 6.766 | -56.339 | 11.037 | -1.89 | 11.198 | 158.157 |
| 0.8 | 1.898 | 1.916 | -29.789 | 6.821 | -2.055 | 7.124 | -50.68 | 11.144 | -1.998 | 11.322 | 196.648 |

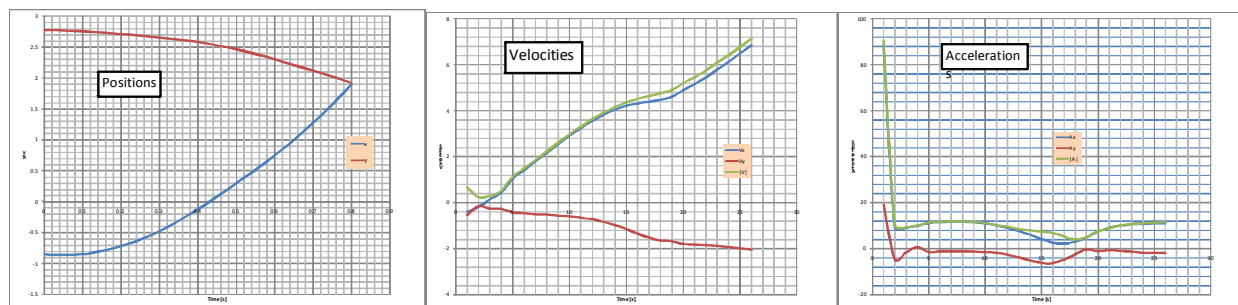


Fig. 4 Kinematics of the thigh's center of gravity

We can also determine the reactive forces in the rotational joint that links the leg to the thigh. Both components can be shown (fig.5), together with the

absolute value of the reaction force. Table 2 provides the values of that force on x and y axis, with respect to time variable.

Table 2 – Reactive force of rotational joint

| t | Fx | Fy | F |
|-------|---------|---------|---------|
| 0 | 859.556 | 144.608 | 871.636 |
| 0.032 | 19.346 | 34.899 | 39.903 |
| 0.064 | 14.098 | 43.725 | 45.941 |
| 0.096 | 17.587 | 61.088 | 63.569 |
| 0.128 | 27.103 | 42.142 | 50.105 |
| 0.16 | 29.114 | 60.96 | 67.555 |
| 0.192 | 35.988 | 74.98 | 83.169 |
| 0.224 | 47.312 | 88.745 | 100.569 |
| 0.256 | 63.461 | 101.65 | 119.833 |
| 0.288 | 84.409 | 109.169 | 137.996 |
| 0.32 | 107.167 | 107.386 | 151.712 |
| 0.352 | 128.432 | 94.364 | 159.372 |
| 0.384 | 143.443 | 71.759 | 160.391 |
| 0.416 | 146.968 | 43.01 | 153.133 |
| 0.448 | 134.76 | 13.893 | 135.474 |
| 0.48 | 108.37 | -7.997 | 108.665 |
| 0.512 | 80.079 | -18.901 | 82.279 |
| 0.544 | 61.883 | -23.081 | 66.047 |
| 0.576 | 50.398 | -22.91 | 55.361 |
| 0.608 | 49.449 | -31.832 | 58.809 |
| 0.64 | 38.301 | -22.477 | 44.409 |
| 0.672 | 30.664 | -9.779 | 32.186 |
| 0.704 | 27.346 | 2.41 | 27.452 |
| 0.736 | 26.711 | 12.663 | 29.56 |
| 0.768 | 27.471 | 20.232 | 34.117 |
| 0.8 | 28.773 | 24.713 | 37.929 |

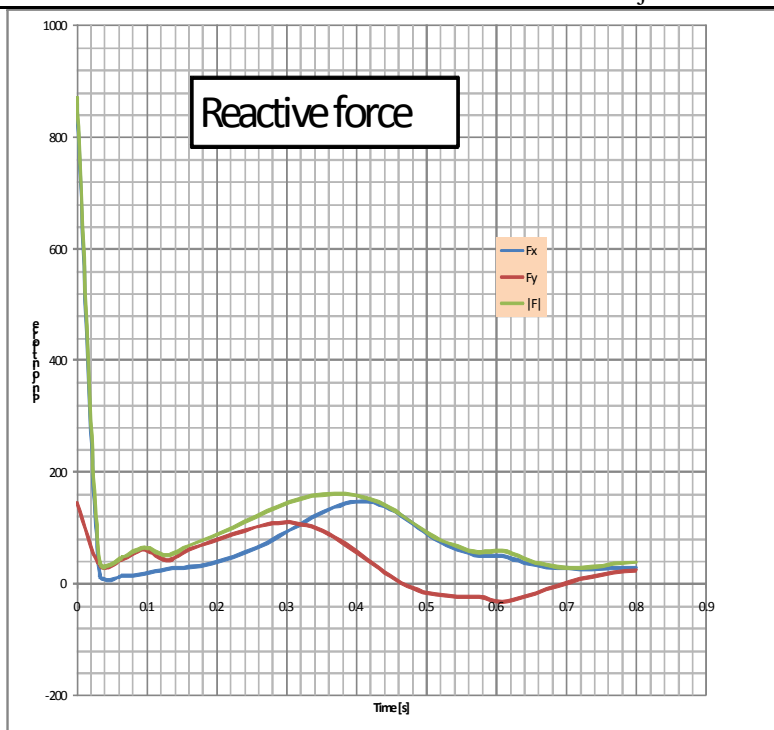
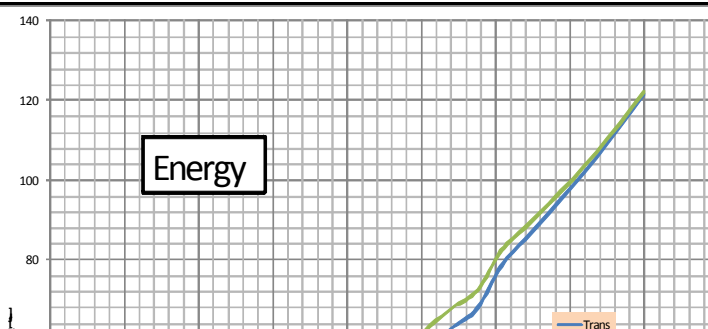


Fig. 5 Reactive force in rotational joint

We can also determine the kinetic and rotational energy of the thigh, together with the total energy, as Konig formula stands.

The results are shown in table 3 and fig.6.

| t | Trans | Rot | Total |
|-------|--------|-------|--------|
| 0 | 3.581 | 0 | 3.581 |
| 0.032 | 0.155 | 0.47 | 0.625 |
| 0.064 | 0.304 | 0.021 | 0.324 |
| 0.096 | 0.175 | 0.001 | 0.176 |
| 0.128 | 0.591 | 0.32 | 0.911 |
| 0.16 | 0.975 | 0.696 | 1.671 |
| 0.192 | 1.593 | 1.185 | 2.778 |
| 0.224 | 2.613 | 1.8 | 4.413 |
| 0.256 | 4.274 | 2.486 | 6.76 |
| 0.288 | 6.957 | 3.184 | 10.141 |
| 0.32 | 11.063 | 3.826 | 14.889 |



| | | | |
|-------|---------|-------|---------|
| 0.352 | 16.874 | 4.358 | 21.232 |
| 0.384 | 24.475 | 4.78 | 29.255 |
| 0.416 | 33.487 | 5.073 | 38.561 |
| 0.448 | 42.973 | 5.232 | 48.206 |
| 0.48 | 51.512 | 5.265 | 56.777 |
| 0.512 | 58.083 | 5.18 | 63.263 |
| 0.544 | 63.126 | 4.948 | 68.074 |
| 0.576 | 67.753 | 4.511 | 72.264 |
| 0.608 | 78.423 | 3.758 | 82.18 |
| 0.64 | 85.068 | 3.033 | 88.101 |
| 0.672 | 91.709 | 2.284 | 93.993 |
| 0.704 | 98.489 | 1.606 | 100.095 |
| 0.736 | 105.717 | 1.07 | 106.787 |
| 0.768 | 113.448 | 0.664 | 114.112 |
| 0.8 | 121.613 | 0.363 | 121.976 |

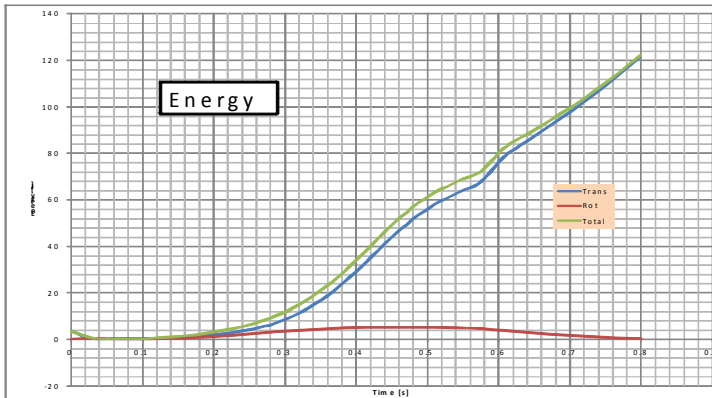


Fig.6 Kinetic, rotational and total energy

Conclusions

WM 2D is a complex software that provides information on all types of mechanical structures. The human body can be easily converted into a mechanical structure, taking into account anatomical and physiological considerations. In order to get the results of a certain motion of the human body we can choose proper input data to estimate the real motion of human linkages, and the virtual model will provide us all kinds of information, according to the desired characteristics.

Thus, for the standing jump we can determine the velocities of center of gravity of all rigid bodies in the linkage, the reactive forces in couplings, the energy stored in muscles and other important data.

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Model cinématique des membres inférieurs d'un athlète effectuant le saut en longueur

Résumé: Cet article présente le modèle virtuel pour l'étude de la cinématique d'un athlète de saut en longueur lors de l'exécution d'ameublir le sol. Jambes athlète sportif sont considérées comme un des éléments cinématiques qui sont constituées de chaînes cinématiques liés par des joints cinématiques (articulations). Le programme WM 2D permet animations 2D et des mesures sur le modèle virtuel.

Mots-clés: la cinématique du membre inférieur, le saut en longueur, WM 2D

Model virtual pentru cinematica membrelor inferioare ale unui atlet care efectuează săritura în lungime

Rezumat: Lucrarea prezintă modelul virtual pentru studierea cinematicii unui atlet care efectuează săritura în lungime în momentul desprinderii de sol. Membrele inferioare ale atletului atlet acționează ca lanturi cinematice formate din elemente cinematice legate între ele prin cuple cinematice (articulații). Programul Working Model 2D permite realizarea animațiilor și a măsurărilor pe modelul virtual.

Cuvinte cheie: cinematica membrelor inferioare, săritura în lungime, WM 2D

ASSESSMENT OF SPORTIVE MOTOR QUALITIES AND SKILLS LEVEL OF DEVELOPMENT BY EMPLOYING MEANS THAT ARE SPECIFIC TO SCHOOL ATHLETIC POLYATHLON

Lector univ. dr. Corneliu SCURT, Univ TRANSILVANIA Braşov

Abstract: School athletic polyathlon represents an effective instrument which enables testing of sportive motor qualities and skills development level in gymnasium-cycle students as well as building of a representative team to participate in the final phases of the School Sports National Olympics.

The results obtained by some of the school girls athletes have demonstrated the value of both their basic motor qualities as well as their athletic motor skills, allowing the practice of performance athletics.

Key words: athletic polyathlon, athletics, motor qualities, motor skills, school sport.

In order to achieve the best outcome through the selection process, a number of additional details must be provided regarding the level of athletic sports motor qualities and skills..

The body development and growth level has an individualized character while the level of sport performances is closely linked to the maturation degree of the morpho-physiological substrate of qualities and skills demanded by a certain sport discipline or sport event. The level of basic motor qualities will be considered in close correlation with the body development and growth level. Depending on this, an appropriate set of recommendations can be established regarding the age at which gymnasial students can be initiated in performance sports. Considering that the running speed value in schoolgirls aged 13-15 is about 97-99% of the speed value achieved at mature age, we have a good measure for evaluating the evolution of this motor quality..

Regarding the strength qualities in subjects aged 14 years these amount to 4/5 of the mature age values, while the indicators at this level constitute valid arguments in this respect.

At this age, the vertical jump height features an accelerated growth rate, while the results and conclusions can corroborate the possibility of being selected for performance sport in sport events that require this specific motor quality as a dominant one. The specific ability required in athletics events implies several senses such as space orientation, coordination of limb movement, coordination of great muscle groups activity, movement analysis and decomposition, direction differentiation and reproduction etc.

The research hypothesis presumes that assessing the level of motor qualities and skills in gymnasium students through school athletics tetrathlon events will allow to identify the possibilities for practising

performance sport in schoolgirls of this age group and simultaneously increase the level of test indicators by elaborating adequate training and competition models. **The research object** is the training and competition model for gymnasium-cycle schoolgirls who practise school athletics polyathlon.

The research aim, is to create a training and competition model for schoolgirls involved in this type of athletic events.

The research was carried out on gymnasial cycle schoolgirls who participated in the county phase of the School Athletics Tetrathlon of the School Sport National Olympics Brasov 2010. The participants were organized in teams, each team consisting of six schoolgirls. The tables were prepared by considering the results of the first four competitors. The schoolgirls were selected and trained in school athletics associations coordinated by specialty teachers

The best performance in the 60 m sprint event was obtained by C.I. from the General school 14 Brasov (Table1) with a time of 8.5 seconds and assessed with 89 points, while the poorest performance with a time of 10.9 seconds was assessed with 21 points. A number of 12 schoolgirls performed above average considering 50% from the total number of participants. Considering technique mastering, the occurring errors revealed the need for enhancing crouch start and after-start drive techniques. Statistics data dispersion parameters such as an amplitude of 68 and a coefficient of variance of 33,51, show that group results for this event are inhomogenous (Table 2). The best long jump result was obtained again by C.I for a performance of 5.02m assessed with 97 points, the average of the group being 3.70m (Table 2). From the standpoint of performance homogeneity for this event the coefficient of variance is 29.51%, the data dispersion is average, which is sufficiently representative for the selected sample. In this event were noticed some deficiencies regarding

takeoff marker area, and correct angle takeoff as well as landing problems, especially damping during landing. The oina ball toss featured its best performance with 47m, assessed with 72 points, the arithmetic mean being 24,5m the equivalent of 33 points. The coefficient of variance is 55.93% and the arithmetic mean is non-representative for this sample because only 9 schoolgirls performed above average. This is the event with the poorest performances both individual and team competitors, caused mainly by poor techniques usage during impetus sprinting, throwing steps, and ball delivery at the appropriate angle

The best performance for the 800 m endurance run was obtained by C.L. from the General school Hălchiu, with 2'43", assessed with 74 points, while a number of

11 schoolgirls performed above the group average. Here, the coefficient of variance of 44,69% shows that the arithmetic mean is non-representative for this sample. This was by far the least prepared event during training classes by schoolgirls from a number of general schools, which also resulted in competition abandoning due to inadequate training. A statistical analysis of the performances achieved by the group of schoolgirl athletes who participated in the School Tetrathlon County Championship shows that there are valuable subjects who could accede to performance sport, especially those who scored results above the amplitude coefficient 5 in sprint events, 6 in long jump, 3 in oina ball toss, and 3 in the endurance run.

Table 1

| | Event | max.perf. | min.perf. | Arithm. mean | Amplit | σ | Cv/% |
|----|----------------------------|-----------|-----------|--------------|---------|----------|-------|
| 1. | 60m sprint (p/sec) | 89/8.5 | 21/10.9 | 52/9,6 | 68/9.1 | 17,43 | 33,51 |
| 2. | Long jump(p/m) | 97/5.02 | 33/2.88 | 55.6/3,70 | 64/2.14 | 16,41 | 29,51 |
| 3. | Oină ball toss(p/m) | 72/47 | 21/18 | 33/24,5 | 51/29 | 18,46 | 55,93 |
| 4. | 800m endurance run (p/min) | 74/2.43 | 6/4.03 | 39/3.30 | 68/2.49 | 17,43 | 44,69 |

CONCLUSIONS

- The number of participants in the county phase of the School Athletics Championship is increasing compared to the previous years.
- The level of sport motor qualities and skills in schoolgirls who participate in performance sports is poor as resulted from the events used for testing their aerobic endurance qualities and tossing/throwing skills as well,
- The absence of training opportunities through school athletics associations are causes which negatively affect the level of motor qualities and skills,
- The absence of an adequate competition calendar along with the lack of a record of the students' participation in athletics competitions has negative consequences on the athletes' performances.

RECOMMENDATIONS

- Providing multilateral athletics training as well as polyvalent athletics through balanced development of motor qualities while forming a large background of specific athletics skills through athletics sports associations,
- Selection of training methods and means adequate for developing the deficient motor qualities, aerobic endurance and tossing/throwing skills.
- Providing an adequate competition calendar for schools and involving a greater number of

participants in competitions to ensure a good selection basis at this level,

- Establishing of adequately equipped sports facilities in schools in order to provide an appropriate training level for this age group.

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Evaluation de la qualité et le niveau de développement en appliquant les moyens spécifiques de poliatlon

Résumé: La Poliatlonul moyen efficace pour atteindre les normes de qualité et des tests de compétences de conduite dans le sport ainsi que des étudiants de l'école secondaire le représentant de l'équipe à participer aux dernières étapes de l'Olympiade nationale du sport scolaire.

Mots-clés: poliatlon, l'athlétisme, motricité, sport à l'école

Evaluarea nivelului dezvoltării calităților și deprinderilor motrice sportive prin aplicarea mijloacelor specifice poliatlonului athletic școlar

Rezumat: Poliatlonul athletic școlar reprezintă un mijloc eficient prin care se poate realiza testarea nivelului calităților și deprinderilor motrice sportive la nivelul elevilor din ciclul gimnazial precum și constituirea echipei reprezentative a școlii pentru participarea la fazele superioare ale Olimpiadei Naționale a Sportului Școlar.

Rezultatele obținute de către unele dintre participante atât în ceea ce privește calitățile motrice de bază precum și a deprinderilor motrice atletice sunt de valoare, lucru care permite practicarea atletismului de performanță.

Cuvinte cheie: poliatlon athletic, atletism, calități motrice, deprinderi motrice, sportul școlar

Table 3. Planning of the main training indicators

| INDICATORS | | AGE | | 14-15 year gyrls |
|--------------------------|--------------------|------------------------|--|---------------------|
| | | | | Propose pattern |
| Number of training /year | | | | 120-140 |
| Number of cycles /week | | | | 40 |
| Number of trainings/week | | | | 4-5 |
| Long duration race (km) | | | | 600 |
| Distance, rhythms | Up to 60-80m | 95% | | 70 |
| | More than 80m | 85% | | 30 |
| | More than 80m | 80% | | 35 |
| | More than 80m | 75% | | 22 |
| | Cross-country (km) | | | 600 |
| Starts | | plat | | 230 |
| | | hurdles | | 200 |
| Long jump (numbers) | | with variable momentum | | 400 |
| | | with full momentum | | 200 |
| Oina ball toss (numbers) | | without momentum | | 400 |
| | | with momentum | | 600 |
| Strength | | | | x |
| Take-off (numbers) | | | | 4000 |
| Sports games (hrs) | | | | 34 |
| Contests | basic events | | | 2-3 |
| | other events | | | 5 |

Table 2

| PLA CE | NAME, FIRST NAME | SCHOOL | GRA DE | BIRTH YEAR | 60m | | LONG JUMP | | | | OINĂ BALL TOSS | | | | 800m | | PT |
|-----------|------------------------|-------------|-----------|---------------|------|-----|-----------|------|---|-----|----------------|------|---|-----|-------------|-----|-------|
| | | | | | RES | PT | RESULTS | | | PT | RESULTS | | | PT | RESUL TS | PT | TOTAL |
| | | | | | | | 1 | 2 | 3 | | 1 | 2 | 3 | | | | |
| 1 | D.A. | C.M.CRISTEA | VI | 1994 | 8.9 | 75 | 4.30 | 4.10 | | 76 | 33.0 | 28.0 | | 30 | 2:57.0 | 60 | 241 |
| 1 | G.G. | C.M.CRISTEA | VIII | 1996 | 9.2 | 65 | X | 3.72 | | 54 | X | 18.0 | | 21 | 3:06.0 | 51 | 191 |
| 1 | Z.B. | C.M.CRISTEA | VIII | 1996 | 9.0 | 71 | 4.05 | 4.28 | | 73 | 21.0 | 24.0 | | 32 | 2:55.0 | 62 | 238 |
| 1 | C.G. | C.M.CRISTEA | VIII | 1995 | 9.4 | 57 | 3.76 | 3.90 | | 60 | 20.0 | 21.5 | | 27 | 3:07.0 | 50 | 194 |
| | TOTAL TEAM | | | | | 268 | | | | 263 | | | | 110 | | 223 | 864 |
| 2 | C.I. | ȘC. 14 BV. | VI | 1997 | 8.5 | 89 | 4.55 | 5.02 | | 97 | X | 28.0 | | 40 | 2:41.0 | 76 | 302 |
| 2 | V.A. | ȘC. 14 BV. | VII | 1996 | 10.5 | 29 | 3.50 | 3.62 | | 50 | X | X | | 0 | 3:36.0 | 31 | 110 |
| 2 | C.A. | ȘC. 14 BV. | VII | 1995 | 9.4 | 58 | 3.74 | 3.90 | | 60 | 24.0 | 47.0 | | 72 | 3:33.0 | 35 | 225 |
| 2 | C.M. | ȘC. 14 BV. | VII | 1995 | 9.7 | 49 | 3.67 | X | | 52 | 37.0 | 37.0 | | 58 | 3:45.0 | 44 | 203 |
| | TOTAL TEAM | | | | | 225 | | | | 259 | | | | 170 | | 186 | 840 |
| 3 | M.A. | GR. ANTIPA | VI | 1996 | 8.6 | 86 | 4.78 | X | | 89 | X | 30.0 | | 44 | 3:02.5 | 54 | 273 |
| 3 | F.A. | GR. ANTIPA | VIII | 1995 | 9.1 | 68 | 4.17 | 3.90 | | 68 | 17.5 | 18.5 | | 22 | 3:29.0 | 29 | 187 |
| 3 | G.C. | GR. ANTIPA | VII | 1996 | 9.7 | 49 | 3.22 | 3.40 | | 45 | 15.0 | 17.0 | | 19 | 3:25.0 | 32 | 145 |
| 3 | L.A. | GR. ANTIPA | VII | 1996 | 9.9 | 44 | 3.61 | 3.50 | | 50 | 10 | 12.0 | | 10 | 3:41.0 | 21 | 125 |
| | TOTAL TEAM | | | | | 246 | | | | 252 | | | | 95 | | 136 | 730 |
| 4 | D.M. | P.MĂRULUI | VIII | 1996 | 9.3 | 61 | 3.63 | 3.30 | | 51 | 31.0 | 33.0 | | 50 | 3:07.0 | 50 | 212 |
| 4 | N.R.. | P MĂRULUI | VIII | 1995 | 10.4 | 31 | X | 3.20 | | 40 | 27.0 | 33.0 | | 50 | 3:36.0 | 24 | 145 |
| 4 | A.I. | PMĂRULUI | VII | 1995 | 9.6 | 52 | 3.00 | 3.25 | | 41 | 27.0 | 24.0 | | 38 | 3:47.0 | 17 | 148 |
| 4 | P.I. | P.MĂRULUI | VII | 1996 | 10.4 | 31 | 3.45 | 3.20 | | 47 | 21.0 | 22.0 | | 28 | 3:17.0 | 40 | 146 |
| | TOTAL TEAM | | | | | 175 | | | | 179 | | | | 166 | | 131 | 651 |
| 5 | S.D. | ȘC.ZĂRNEȘTI | VIII | 1994 | 9.2 | 58 | X | 3.58 | | 49 | 19.0 | 20.0 | | 24 | 2:48.0 | 69 | 200 |
| 5 | P.S.. | ȘC.ZĂRNEȘTI | VII | 1996 | 10.7 | 25 | 2.88 | X | | 33 | 40.0 | 38.0 | | 64 | 3:32.0 | 27 | 149 |
| 5 | M.L. | ȘC.ZĂRNEȘTI | VII | 1995 | 10.0 | 41 | X | 3.30 | | 42 | 20.0 | 24.0 | | 32 | 3:31.0 | 27 | 142 |
| 5 | S.A. | ȘC.ZĂRNEȘTI | VI | 1996 | 9.8 | 46 | 3.45 | 3.58 | | 49 | 25.0 | 24.0 | | 34 | 3:29.0 | 29 | 158 |
| | TOTAL TEAM | | | | | 170 | | | | 173 | | | | 154 | | 152 | 649 |
| 6 | A.S. | ȘC. HĂLCHIU | VIII | 1996 | 10.9 | 21 | 2.75 | 3.15 | | 39 | 30.0 | 27.0 | | 44 | 4:03.0 | 6 | 110 |
| 6 | N.D. | ȘC. HĂLCHIU | VIII | 1997 | 10.4 | 31 | 2.85 | 3.00 | | 36 | X | X | | 0 | 3:50.0 | 15 | 82 |
| 6 | U.O. | ȘC. HĂLCHIU | VII | 1997 | 10.4 | 31 | 3.00 | X | | 36 | 10.0 | 20.0 | | 24 | 3:51.0 | 14 | 105 |
| 6 | C.L. | ȘC. HĂLCHIU | VIII | 1996 | 8.6 | 86 | 5.02 | 4.95 | | 98 | 27.0 | 27.0 | | 38 | 2:43.0 | 74 | 296 |
| | TOTAL TEAM | | | | | 169 | | | | 209 | | | | 106 | | 109 | 593 |

Table 4

MODEL OF SIMPLIFIED SCHEME OF WEEKLY TRAINING CYCLES AND THE OBJECTIVES DURING
DIFFERENT STAGES OF THE ANNUAL CYCLE

| Weekdays | Fall-winter preparatory stage | Winter-spring preparatory stage | Competition stage |
|------------------|---|---|--|
| Monday | <ul style="list-style-type: none"> - upgrading sprinting technique - learning/developing of explosive strength | <ul style="list-style-type: none"> - upgrading sprinting technique - learning/developing general ability | <ul style="list-style-type: none"> - learning /developing the ability specific to polyathlon events - perfecting the sprinting technique |
| Tuesday | | <ul style="list-style-type: none"> - upgrading of hurdles technique. - learning/developing strength | |
| Wednesday | <ul style="list-style-type: none"> - upgrading the technique of long jump with impetus - learning/developing strength | <ul style="list-style-type: none"> - learning/developing speed - upgrading oina ball toss technique | <ul style="list-style-type: none"> - learning/developing repetition speed. - perfecting oina ball toss |
| Thursday | | | <ul style="list-style-type: none"> - upgrading long jump take-off with impetus - perfecting crouch start and start drive |
| Friday | <ul style="list-style-type: none"> - oina ball toss technique upgrading. - learning/developing speed | <ul style="list-style-type: none"> - upgrading and perfecting long jump technique - learning/developing force | |
| Saturday | <ul style="list-style-type: none"> - endurance run technique upgrading - learning/developing ability | | <ul style="list-style-type: none"> - assessing the students' potential during the events of School athletics polyathlon |

CORRELATION BETWEEN BODY COMPOSITION AND CERTAIN CONDITIONAL MOTOR SKILL INDICES –STRENGTH

Carmina Liana MUŞAT, Aurel NECHITA, Malina COMAN, Madalina MATEI

Summary: *Body composition is a significant practical indicator of shape in sports, conditioning performance irrespective of the sporting branch practiced. In the present study, based on the multivaried analysis, the main components were determined in the discrimination of various types of indices and the representative of the conditional motor skills indices—strength.*

The study was concluded by evincing some certain variations of the dependence of strength on the indices studied (weight and body composition).

Key words: *body composition, active mass, adipose tissue, strength, multivaried analysis*

Introduction

In many sports it is necessary for the athlete to have a low level of adipose tissue, the excess of which decreases the ability in jumping, running speed and endurance capacity (1, 2). There are overweight athletes (such as in body building, canoeing) with an athletic build, but a low percentage of adipose tissue and a very well developed muscular mass.

The athlete with a good active mass may stand a high level of sub-cutaneous adipose tissue (as in rugby, athletic throwing events), but this increase should not be associated to increased blood lipids and cholesterol (4). Even if in athletics it is necessary for the athletes to have an underweight allure with a good active mass and minimum adipose tissue, a certain amount of adipose tissue is necessary to maintain good health, the essential lipids being instrumental to the optimum operation of the body (3,5).

The modifications of weight and body composition in athletes are correlated to the state of training, training period and energy supply. Certain studies have shown that the percentage of adipose tissue is inversely proportional to the maximal aerobic capacity and performance in long-distance running, while the level of active mass is correlated to performance in sports requiring maximum strength (6).

Since body composition is one of the factors contributing to performance in sports, its determination being an important component in the dynamic monitoring of elite athletes, this study aims at determining by multivaried analysis the type of correlations created between body composition and weight, on the one hand, and the conditional motor skill indices-strength, on the other hand.

Material and method

The study includes 60 professional athletes (male), on a voluntary basis, aged between 14-16, all enrolled in the CSS and LPS Galaţi and Brăila. Three study groups were constituted:

Group 1- 20 athletes aged 14.

Group 2- 20 athletes aged 15.

Group 3- 20 athletes aged 16.

In order to obtain data regarding the active muscular mass and the quantity of adipose tissue, two measurements were carried out (initial- June, final- November) in the Laboratory of functional explorations, effort capacity testing and physical development assessment within the Faculty of Medicine and Pharmacy in Dunarea de Jos University Galati, evaluating the following:

a. weight – body mass, the full weighing of the athletes being performed in the morning, before eating, the subject being completely naked;

b. body composition.

In order to assess the adipose tissue, 5 skin folds of adipose tissue were measured – abdomen, flank, back, arm, thigh – on the right side of the body, by means of the adipocentriment. The calculus used the Dubois-Raymond nomogram, to determine the body surface. In order to determine the BMI the following formula was used: $G(\text{kg})/I^2(\text{cm})$. Strength tests were made at LPS and CSS in July (initial testing) and November (final testing) by the standing leap event. The data collected from the two assessments were centralised in a database of the Excel type. In order to determine the type and intensity of multivaried correlations, the analysis of the scores associated to the subjects and the loadings associated to the variables was performed. The results are presented in the following sections.

Results and discussions

By analysing the data obtained in the 3 lots, the conclusion was drawn that the optimal average weight is 64.75 kg as compared to 63.31 kg, the average of the real weight. The adipose tissue is within the interval (6.7%-10.17%). The optimum lean mass is situated between (43.61-72.09) as compared to the real lean

mass which is situated between (44.5-73.8).The values obtained for each age group are the ones shown in the

following table (table 1, 2):

Table 1

Average values obtained for the three groups –July

| Year of birth | Weight | Optimal weight | Adipose tissue % | Adipose tissue kg | Lean mass | Optimal lean mass | Optimal adipose tissue |
|---------------|--------|----------------|------------------|-------------------|-----------|-------------------|------------------------|
| 1993 | 68.20 | 67.38 | 8.80 | 9.07 | 62.14 | 60.24 | 6.72 |
| 1994 | 63.78 | 62.99 | 8.52 | 5.44 | 58.24 | 56.80 | 6.22 |
| 1995 | 60.95 | 60.26 | 8.02 | 4.94 | 56.01 | 54.29 | 5.96 |

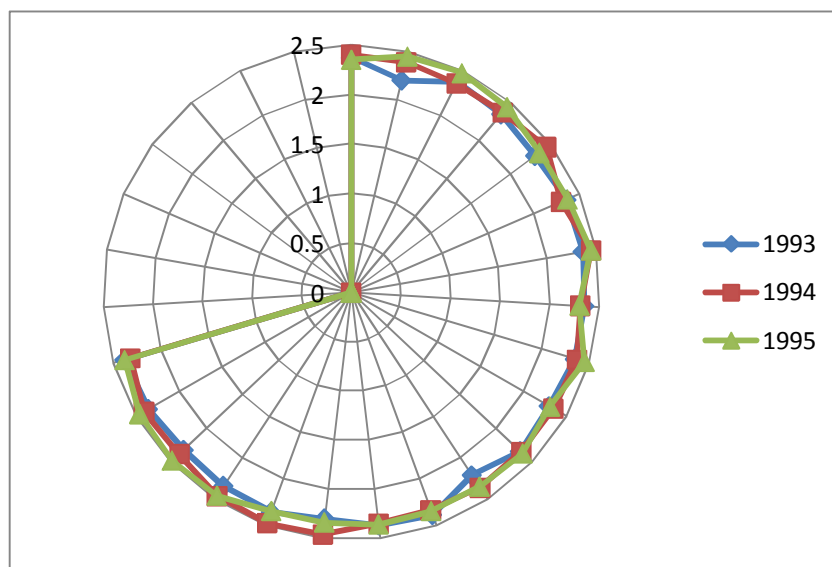
Table 2

Average values obtained for the three groups –November

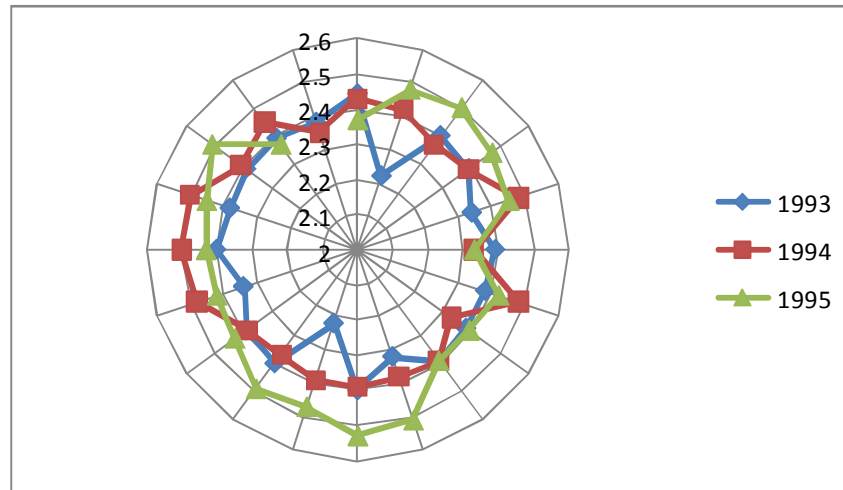
| Year of birth | Weight | Optimal weight | Adipose tissue % | Adipose tissue kg | Lean mass | Optimal lean mass | Optimal adipose tissue |
|---------------|--------|----------------|------------------|-------------------|-----------|-------------------|------------------------|
| 1993 | 68.45 | 67.48 | 8.75 | 9.03 | 62.24 | 60.18 | 6.77 |
| 1994 | 63.98 | 63.12 | 8.5 | 5.34 | 58.64 | 56.80 | 6.22 |
| 1995 | 60.95 | 60.26 | 8 | 4.94 | 56.01 | 54.29 | 5.96 |

The initial and final values corresponding to the standing leap testing are homogeneous within each age group. One should note the variations according to age group, as well as according to the testing moment (initial and final) (graph 1, 2). The most notable

difference between the two recordings is to be seen in the group of athletes born in 1993, presenting an average value of 220 cm in June and 239cm in November.



Graph 1. Determination of the conditional skills indices – strength for the 3 lots, June



Graph 2. Determination of the indices of conditional skills - strength for the 3 lots, November

The database was drawn up and the following step was a multivariate analysis study of this database. For modelling, each subject was attributed a code. The database on whose basis the modelling was performed meant an input matrix with 60 x 139 values, made up of the data measured for the 9 variables for each of the 60 subjects. To initiate the expert system and the evaluation of modelling parameters, the Principal Component Analysis (PCA) was performed. In this iteration, for the modelling the weight of the variables was selected as equal to 1, in order to see which of the variables varies the most. The method was full cross-validation. The analysis was initiated with a number of 20 principal components (PC). The data was centered around the average value.

This approach led to reducing by one order this final PCA model, as the study determined and analysed the multivariate correlations between the conditional motor skills indices – strength on the one hand, weight and body composition on the other hand. The determinations performed focused on both the correlations (positive or negative), and a hierarchisation of the correlation intensity between the various variables (indices).

The indices of conditional motor skills linked to length in the standing leap, measured in July (variable code SIUL) and in November (variable code SNOV), were both characterised by low negative PC1 loadings and high positive PC2 loadings. The strength indices (June and November) in all the three age groups are strongly correlated in a negative manner with:

Weight -6.151e-02 -0.269.
Optimal lean mass -5.918e-02 -0.269.
Optimal adipose tissue -5.799e-02 -0.269.
Lean mass -6.724e-02 -0.266.
Body surface -7.332e-02 -0.260.
Adipose tissue -kg -1.945e-02 -0.248.

Adipose tissue % 1.945e-02 -0.167.

Conclusions

The body composition is a practical and significant indicator of physical shape, directly conditioning high performance in athletics.

The present study, on the basis of the multivariate analysis, determined the main components discriminating the various types of indices and the representative of the conditional motor skills indices - strength.

The study was finalised by evincing certain correlations which were markedly negative between strength and the indices studied (weight and body composition).

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Les corrélations entre la composition corporelle et des indices des qualités motrice conditionnée - la force

Résumé: La composition corporelle est un indicateur d'ajustement, pratique et utile, ce qui rend la performance de toutes les branches sportives. Dans notre étude, basée sur l'analyse multivariée ont été déterminés par les composantes principales qui relient

les différents types d'indicateurs motriques. L'étude a conclu en soulignant la dépendance de certains changements dans les indices étudiés (poids et la composition corporelle).

Mots-clés: *composition corporelle, la masse active, la graisse corporelle, la force, l'analyse multivariée.*

Corelații între compoziția corporală și unii indici ai calităților motrice condiționale – forță

Rezumat: *Compoziția corporală este un indicator al formei sportive, practic și semnificativ, care condiționează performanța indiferent de ramura*

sportivă practică. În studiul nostru, în baza analizei multivariate au fost determinate acele componente principale care discriminează diversele tipuri de indici și reprezentanța indicilor calităților motrice condiționale- forță.

Studiul s-a finalizat prin punerea în evidență a unor variații certe ale dependenței forței de indicii studiați (greutate și compoziție corporală).

Cuvinte cheie: *compoziție corporală, masa activă, țesut adipos, forță, analiză multivariată.*