

ANTROPOMOTORYKA**CONTENTS**

From Editors

Information for the Authors

DISSERTATIONS AND ARTICLES

Josif Moisiejewicz Fejgenberg (translated: Waclaw Petryński)

Memory of the past for probabilistic prognosis of the future

Samsoniene Laimute, Adomaitiene Ruta, Saplinskas Juozas, Baubinas Algirdas

Teachers' and students' attitudes towards integrated education of disabled in Lithuanian

Janusz Iskra, Anna Walaszczyk, Marzena Paruzel-Dyja

Skill types and training loads in men's 400 m hurdle run

Jerzy Januszewski, Edward Mleczko

Conditioning of motor efficiency of children from sports forms at the age of 11-14

Stanisław Sterkowicz, Stanisław Żak

Body composition and anaerobic power of girls

Robert Podstawski, Dariusz Choszcz, Małgorzata Wysocka-Welanc

Results of motricity tests for female students, conducted on a rowing ergometer concept II indoor rower

Henryk Duda

Influence of instructing programed on efficiency of instruction of woman in game to football

REVIEW PAPERS

Adam Haleczko

Motor abilities of women and men conditioned by somatic features

Jan Strugarek

SOFIT & SOPLAY as tool of measuring physical activity of children and youths by means of direct observation

DISCUSSIONS

Waclaw Petryński

Memory and motor control in humans

Józef Drabik

Motion and physical exercise

REVIEWS

Waclaw Petryński

Deliberations on the paper by I.M. Feigenberg „*Memory of the past for probabilistic prognosis of the future*”

ANTROPOMOTORYKA

SUMMARY

DISSERTATIONS AND ARTICLES

Josif Moisiejewicz Fejgenberg

Memory of the past for probabilistic prognosis of the future

In the course of evolution, to ensure sufficient speed of precise and complicated actions of a living being, the ability to early responding has been formed. Probabilistic prognosis enables, on the base of former experience retained in memory, anticipation of the most probable further development of external events. On the base of probabilistic prognosis early preparation occurs, as well as preparation of actions adequate to goals which have to be achieved by an organism and to anticipated situation. In the animals' behaviour and humans' motor activities (in sport and work) the probabilistic prognosis and early preparation clearly appears. Those phenomena were examined in laboratory conditions. In the paper the logic structure of the memory which enables the probabilistic prognosis is described and discussed.

Samsoniene Laimute, Adomaitiene Ruta, Saplinskas Juozas, Baubinas Algirdas

Teachers' and students' attitudes towards integrated education of disabled in Lithuanian

Teachers' attitudes toward integrated teaching of students with disabilities [1] as well as attitudes of able-bodied children toward peers with disabilities [2] appears to be a key factor or considered one of the most important variables in successful inclusion of disabled into mainstreamed education. The presumptions of various theories as regards with the phenomenon of attitudes postulate that quality of attitudes depends on: (1) the frequent, pleasant, and meaningful contacts between individuals with differences, (2) situational and environmental factors, (3) relationship between personal and normative beliefs, (4) directly or indirectly acquired body of knowledge regarding the attitudinal object [3]. On the ground of multidimensional nature of attitude, conceptualized as having cognitive, affective and behavioral components [4], was accepted the definition of attitude as following: 'Attitude is an enduring set of beliefs charged emotions that predisposes a person to a certain kind of behaviors' [2]. These considerations provided the structural framework for creation of the instruments and organization of our study. Theories-oriented investigations (instrument -two questionnaires, and the kinds of contingent) of our study was focused on: (1) the teachers' attitudes toward integration of disabled into mainstream education (*cognitive dimension*), integrated teaching of the students with disabilities in their classes (*behavioral dimension*) and (2) attitudes of able-bodied and disabled students toward the intercommunication in various situations (*behavioral dimension*) and the kind of inter-emotions (*emotional dimension*) in relation to: (3) frequent or no contacts and (4) the level of perceived competence or knowledge regarding the disabled. Participants were: (1) **393 teachers** working in: nonintegrated (276), integrated (15) and special (102) schools and (2) **2471 children** from the same schools (1958, 126 and 382 accordingly).

Janusz Iskra, Anna Walaszczyk, Marzena Paruzel-Dyja

Skill types and training loads in men's 400 m hurdle run

Introduction. Results in 400-m hurdle run depend on somatic parameters, motor abilities, technique preparation and long-term way of training.

The aim of the work of this study was to find differences between training loads in various groups of Polish 400-m hurdlers.

Material and methods. Sixty-six Polish hurdlers participated in this study (age: $21,8 \pm 2,3$ years). They represented high sport level (personal best time: $51,93 \pm 1,86$ s). Hurdlers were divided into three groups according to motor abilities and technical skills: rhythm / technical, "endurance" and "speed-strength" hurdlers.

According to previous investigations the analysis of training programs contains five groups of training means: running speed, special endurance, hurdle "rhythm", leg strength and strength endurance.

A one-way analysis of variance (ANOVA) was used to determine the significance of training changes between three groups of hurdlers.

Results. There were no statistically significant differences between the sport level of three groups of hurdlers. The ANOVA analysis revealed differences of all variables (training means) except special endurance.

There are no statistical differences between all the training loads in the second ("endurance") and the third ("speed-strength") group.

In the group of "rhythm" hurdlers we can see specific hurdle training and strength-endurance preparation

Conclusion. Results of empirical investigation may be used in optimisation and individualisation of the training programs.

Jerzy Januszewski, Edward Mleczo

Conditioning of motor efficiency of children from sports forms at the age of 11-14

Introduction. The changeable structure of motor fitness during the process of sports training of children and youth has been the subject of numerous research [1, 2]. They were carried out on cross-section material what can limit an ability to draw certain conclusions about revealing selected biological regularities. This fact influences negatively the value of criteria and norms used in the children selection for record-seeking sport, which are based on such observations.

The aim of the work. In the following observations the earlier notice was decided to confirm about the stability of the motor skill structure among boys and girls during three year sport training process. The observations took place in the sport schools with handball and track and fields major. continuous research, conducted in the sports school with a football profile, the authors attempted to find out whether the changes of hidden predispositions and motor abilities appear during the training process which constitute the foundation for the development of technical and tactic fitness against the background of the similar research results carried out in the comparative groups of non-training individuals?

Material and methods. The subject of analysis was the files gathered during the continue researches in one of the sport schools in Krakow in classes of major subjects like handball and track and fields. All tested children were qualified for the training basing on the recruitment among numerous group of children from one of the Krakow quarters (Nowa Huta) using traditional selection tests. It was the different procedure from the one described earlier [10]. In the study the sevenfold researches, results were under consideration, undertaken in the 6 month interstices (November and may) in the years 1997-1999. The test included 25 girls and 31 boys from the sport classes and the contemporary group from the regular class. The range of the research included: measurements of the basic somatic, functional features and the chosen motor skills. The results were estimated using the basic statistical methods and the factor analysis.

Results. The conducted factor analysis revealed the fact that there are minor quantitative differences of the motor structure between training and non-training groups during a three-year observation period. In both the sportsman group and less active physically boys the number of separated factors did not increase as well as the set of variables taken into account.

Conclusions. It can be concluded then, that the applied way of sports selection as well as the process of their adaptation to a specific training ballast might have been the causative factor of the structure efficiency specification among children from sports schools. In the human kinetics the dimorphic varieties can be revealed quantitatively not qualitatively. The intensive biological growing up did not have any influence on the formation of the motor potential structure in the sport group. The authors' researches confirmed suggestions the main factor which can shape the level of the functional features and motor skills can be the training loading. Among the selected subjects achieving desired training effects is difficult and time consuming. In the connection, they cannot deny the thesis that a talented sports masters can be recognised already as child. Still, the ways of such a selection seem controversial.

Stanisław Sterkowicz, Stanisław Żak

Body composition and anaerobic power of girls

Purpose of the paper. The aim of the study was to determine the kinetics and dynamics of the progression of results during the tests of vertical jump and power of lower extremities (P) in girls aged 8-15 with regard to changes in their basic body parts.

Material and methods. The results collected about 167 girls were evaluated during an 8-year continuous research. They concerned the parameters of height, body mass, fat mass (FM) and fat-free mass (FFM), as well as the indices of body mass (BMI) as well as those of fat mass (FMI) and fat-free mass index (FFMI), which like BMI, eliminate the effect of the body size. At the same time, the results of the vertical jump were recorded, because they were a factor when calculating the power of lower extremities. The Hattori chart illustrates an interrelation occurring between FFMI, FMI, BMI and fat percentage (PF%) in the body mass. Developmental standards of the above-mentioned parameters were analysed. Statistically significant differences between the consecutive results of P were verified by means of ANOVA with a repetitive measurement. The following co-variates were taken into account: body height and mass, FFM, FM, BMI, FFMI as well as FMI.

Results and conclusions. A marked development of P caused mainly by the time factor was found. An introduction of the above-mentioned co-variates to the variability analysis did not modify this natural relationship in a significant way. During the examined period of ontogenesis an intensive increment of fat mass index in the 8-11 period was observed, whereas an increasing size of fat free mass index appeared in the 11-13 age bracket, and then (between 13-15 years) a renewed quick increase of fat mass occurred. The variability of FMI and FFMI had an effect on the course of BMI and PF% development. The results of our research were substantially convergent with populational norms. The results of vertical jump and P should be considered in the aspect of the moment when growth spurt occurs. The specificity of every motor ability also requires a relative evaluation not according to the morphological age (its mean values) but according to the specific motor predispositions of the subject.

Robert Podstawski, Dariusz Choszcz, Małgorzata Wysocka-Welanc

Results of motricity tests for female students, conducted on a rowing ergometer concept II indoor rower

The aim of the work. A study was conducted with 345 randomly chosen female students of the University of Warmia and Mazury in Olsztyn in the academic year 2002/2003 aimed at determining their motoricity based on an attempt to cover a distance of 500 m on a rowing ergometer.

Material and methods. The effect of other factors, such as height, body weight and the year of studies on the time of covering the distance was also analysed.

Results. The results indicate that the factors tested in the experiment, such as weight, height, and particularly these two in interaction (height/weight), significantly affect the time of covering the 500 metres on a rowing ergometer. No significant differences were found in relation to the students' year of studies.

Conclusions. The time of covering the distance depends on the *w* index, which is the height/weight ratio. The 500m distance was covered in the shortest time by those students for whom the ratio equalled 2.98. An increase in the index from about 2.85 to about 2.98 reduced the time of a successful attempt from 140 s to 110 s. When the index exceeded 2.98, the time of covering the distance increased significantly.

Henryk Duda

Influence of instructing programed on efficiency of instruction of woman in game to football

The aim. The verification of didactic method is the aim of works – leaning on programmed teaching, it which it was applied was in teaching of game in football among womens. It formulate in work following question investigative: 1. As it effects devolution of message about motor operation means audiovisual on efficiency of instructing technique of game ? 2. If level of knowledge football player it effects sports result. It formulate hypothesis for purpose of research: The competitors subjected the process of teaching and training with didactic centres of aid, leaning on

programmed teaching will reach larger specialist knowledge as well as efficiency motive in comparison to taking in traditional teaching part competitors”.

Material and method. In method of teaching strengthened the teaching was applied was programmed. For verification of level of message about motor operation football players employ test of technical knowledge, for determination of special proficiency employ technical test. Employ statistic research: statistic deviation, average arithmetic, test with t – student level essentiality difference and correlation Pearson linear. Experimental investigations were led by period 5 months In lats 2003-2004 among students II year direction physical education AFE in Cracovie. It research 30 students (women) In program occupance from football participating. Build two groups from which one (15 persons) by all the time research iit took part case on week-days in pilot educational unit (Instructing programed) – occupance lasting 90 min. It carry 14 teaching units. In second group (control group) process of instructing realize traditional methods, where message about motor operations football players they were transferred in the course of practical exercises in the form of training.

Results and discussion. Received results of research have confirmed great importance of instructing programed in scaling up of technical ability among researched women. In check groups said highest incrementation of special-istic knowledge – Level of horizon essentiality ($\alpha = 0.001^{***}$), highest index of technical ability ($\alpha = 0,05$). Said also high correlation among level of message but technical proficiency researched ($r_{xy} = 0,824^{***}$ eksperymental group, and $r_{xy} = 0,910^{***}$ control group).

Conclusions. 1. Knowledge can have considerable influence about motor operation on achieved sports result. 2. Cards programed, as techniques of transfers of visual informations help in instruct motor action forming of correct motor imagination. 3. Based procedure methodical accelerates instructing of element of soccer technique on instructing programed.

REVIEW PAPERS

Adam Haleczko

Motor abilities of women and men conditioned by somatic features

Among somatic features which contribute to higher motor achievements of men in comparison with those of women first of all the greater body height and mass as well as more favorable proportions of the active tissue to the passive (fat) are pointed out. It was assumed that only comparison of motor ability in both sexes on the same level of somatic parameters could give credible results. Therefore the experimental groups were formed from couples of individuals of opposite gender and identical values of respective features of body build. The results of investigations were presented in two studies [2, 3]. In the first of them the differences of motor ability between both sexes were discussed after elimination of prevailing body height and mass of men, in the second study differences between motor ability of women and men with the same amount of body fat. Results of these both studies were summarized in [4].

In next study the sample under consideration consisted of students of physical education (first year of education). In analysis the following somatic traits were taken into account: body height and body mass and five skinfolds then logarithmically transformed. First the total body fat and the lean body mass were evaluated on the basis of these features, next quotient indices from them were calculated. These indices were helpful in sex definition. The motor ability was estimated with help of results of five motor tests as well as their sum from the seven performed. The use of correlation analysis made possible to evaluate the diagnostic value of traits and indices under consideration. The level and the direction of their influence on motor sphere was depended on gender and character of a motor task. The body fat occurred to be very important factor. Its distribution in men group was clearly skew. Nevertheless the logarithmic transformation of fat amount didn't change significantly the values of correlation coefficients what proves its small effectiveness in improvement of correlation picture. The connections of this feature with motor ability shows that contentl of body fat in women presents a natural phenomenon which is characteristic for the sex. In contrary, the amount of fat which exceeds the norms definitely influenced negatively the results of men. The findings prove the occurrence of special predisposition of women to endurance events, due to the ability of woman's organism to utilize the fat, the examples of which were reported in some previous studies.

The negative influence of a greater amount of fat tissue on results in endurance runs was observed in children which began their sports training. Taking into account that majority of physical tasks in grammar schools has a speed-strength character, the study was undertaken to establish to what extent such physical activity are influenced by body build and whether there are some differences between sexes. The sample under study consisted of group of girls and boys from IV-VIII grades. The motor tests involved: forward throws with both hands of medicine ball 1 and 2 kg as well as throws of smaller rubber ball weighting 22 g – 340 g performed in a manner of baseball throws. The evaluation of speed-strength predisposition of children was done on a basis of statistical analysis. In younger grades the advantage of speed was evident while the domination of strength was observed in older grades. In the light ball throws the small and slim body build was favorable, especially in girls. Nevertheless relatively small sample volume and rather ambiguous results require to undertake further research on this field.

Jan Strugarek

SOFIT & SOPLAY as tool of measuring physical activity of children and youths by means of direct observation

The purpose of the article is to present the advantages of collecting data concerning physical activity of children and youths by means of direct observation. The latter seems to be one of the best ways of measuring physical activity of children provided it is carried out in accordance with strictly defined procedures (a uniform system of categorization simultaneous recordings of student activity levels etc.). The article presents two systems of collecting data concerning school and out of school physical activities of students i.e. SOFIT & SOPLAY, both successfully used in over 2000 schools in USA. SOFIT is comprehensive system providing a measure of student activity, lesson content/context, teacher involvement while SOPLAY uses momentary time sampling to record the behavior of each participant as sedentary, walking, or very active.

DISCUSSIONS

Wacław Petryński

Memory and motor control in humans

In the paper the division of modern theories of motor control in humans (according to Abernethy and Sparrow) and connected with them processes of information processing in central nervous system have been presented. The shortcomings of this division were pointed out, as well as deficiencies of memory model by Atkinson and Shiffrin, especially when applied to description of motor control in humans. The importance of information processing, and not only information retention, was emphasised. It was also pointed to the fact that in humans mental and motor performances are tightly connected, thus it is impossible to construct a coherent memory model without taking into account the latter. Thus, a new memory model has been proposed, consistent with the Bernstein's theory and the transfer theory of Salomon and Perkins. Then the role of chunking has been discussed, with clear distinction between notions of stimulus, sensory input, sensory impression, word, motor programme, sensorimotor pattern and motor command. The two circles of information processing were presented: sensorimotor and symbolic ones, as well as motor control models using only the sensorimotor circle (0-model) and both circles (8-model).

Józef Drabik

Motion and physical exercise

The aim of these considerations is to dispute with the authors of loosely defined basic terms from the field of physical culture. They are often not only loosely understood, but also often identified and joined together without any basis as well. Among these terms are e.g.: "movement activity and physical activity", "physical fitness and physical shape", "movement activity and health", "movement and physical exercise" and others.

REVIEWS

Wacław Petryński

Deliberations on the paper by I.M. Feigenberg „*Memory of the past for probabilistic prognosis of the future*”

In the paper a comment on article by Prof. I.M. Feigenberg *Memory of the past for probabilistic prognosis of the future* has been presented. Prof. Feigenberg exemplifies the possibilities of adopting probability calculus to description of human perceptual-movement behaviour. Nevertheless, scholars dealing with movement behaviour of a human quite rare use this valuable scientific tool. In the paper has been shown the consistency of Feigenberg's conclusions based on probability calculus and the other branches of science, mainly psychology. The example of probability calculus should encourage scholars to go beyond usual research paradigms and to use tools also from other disciplines of science, e.g. theory of chaos, topology, fuzzy logic, theory of catastrophes etc.
