

DISSERTATIONS AND ARTICLES**Vítězslav Prukner, Karel Měkota**

The relation between the entrance and final motor tests results and somatic parameters in students of physical education at the Faculty of Physical Culture of Palacký University in Olomouc, Czech Republic

Małgorzata Habiera , Elżbieta Rostkowska

Comparison of changes in angles between arm and forearm and between arm and trunk in the Vertical position in synchronized swimmers on various sports levels

Stanisław Żak, Stanisław Sterkowicz

The influence of peak height velocity and age of girls on some of their co-ordination motor abilities

Jarosław Domaradzki, Zofia Ignasiak

The level of morphofunctional development of the rural girls from copper mine district in comparison to their sexual maturity

Adam Haleczko, Urszula Włodarczyk

Influence of somatic factor on the physical efforts of complex and multidirectional structure

Monika Guskowska

Personality traits and situational factors as determinants of motor activity in youth

REVIEW PAPERS**Paul S Glazier, Keith Davids, Roger M Bartlett**

Dynamical systems theory: a relevant framework for performance-oriented sports biomechanics research 2

Małgorzata Żychowska

Genetics of chosen psychomotoric and physiological traits in human: methodology and state of experiments

DISCUSSIONS**Wiesław Osiński**

Physical fitness and the human motoricity researches: dispute about basic construct is still actual

Wacław Petryński

Internal movement models – do they exist or not?

REVIEWS**Edward Mleczko**

The problem of the human motoricity – Tadeusz Rynkiewicz’s monograph “The structure of the motor capabilities and their global and local forms” – in bit different way

Krzysztof Kusy

Wiesław Osinski, Antropomotrics (2nd expanded edition), University School of Physical Education, Poznań (Poland), 2003

ANNOUNCEMENTS

Wacław Petryński

“Motor Control 2004” Conference

DISSERTATIONS AND ARTICLES

Vítězslav Prukner, Karel Měkota

The relation between the entrance and final motor tests results and somatic parameters in students of physical education at the Faculty of Physical Culture of Palacký University in Olomouc, Czech Republic

The purpose of the work. In this study, which is the part of a larger project, we are concerned in the description of the general and athletic performance level as well as in the description of the physical education students’ somatic state. Apart from this we concentrate on two methodological problems: the reliability and validity of the entrance tests and measurements. Incorporating of the time standpoint is a new aspect. We are interested in the long-termed reliability (stability) and the predictive validity which reflects, beside chance fluctuation and measurement inaccuracy, interindividually different changes caused by training which the students undergo in the course of the first and second year of the physical education study.

Małgorzata Habiera , Elżbieta Rostkowska

Comparison of changes in angles between arm and forearm and between arm and trunk in the Vertical position in synchronized swimmers on various sports levels

Purpose of the work. The aim of the study is to present the research capacity of computer method of measuring and analysis of underwater movement technique, the assessment of selected elements of underwater movement technique in synchronized swimming, the comparison of changes in selected angles of the upper limb during one cycle of supporting movement in the Vertical position.

Material and methods. The study material comprised five female synchronized swimmers on various levels of technical advancement and of various ages. The study was carried out with the use of a system of devices for the analysis and assessment of technique of movements in water developed in the Department of Swimming and Water Rescue of the University School of Physical Education in Poznań.

Results. Visual observation combined with computer analysis has allowed to divide the cycle in supporting movement in the Vertical position into phases: water grip, gathering, sweep and preparation. The article presents changes in angles between arm and forearm as well as

between arm and trunk during individual phases of the studied movement with their duration. The course of the underwater movement was compared between swimmers. The degree of asymmetry between the movement of the right and left upper limbs was assessed.

Conclusions. It was found that in order to maintain the full height of the performed position the phases of water grip and gathering should be mastered in particular. The maintaining of the angle within the range of 90 to 110 between the arm and the forearm in the sweep phase guarantees stability of the Vertical position. Any deviations from this value of the angle result in upsetting the stability forward (if the angle is greater) or backward (if the angle is smaller) and thus maintaining of the Vertical position is impossible.

Stanisław Żak, Stanisław Sterkowicz

The influence of peak height velocity and age of girls on some of their co-ordination motor abilities

Aim. Evaluation of influence of calendar age and peak height velocity (PHV) on kinetics and developmental dynamics of four basic components of motor co-ordination.

Material and method. On the basis of continuous research on 193 girls in the 8-15 age range their development was evaluated. The contribution of time and PHV factors in the differentiation of the development and level of static balance, spatial orientation, frequency of movements and simple reaction time were determined by means of ANOVA with repeated measurements.

Results and discussion. In general, the obtained results ruled out the influence of PHV on the formation of the tested parameters related to calendar age, as had been suggested by other authors. No modifying influence of co-variates was also found (flexibility, muscular strength, running endurance) on the level and direction of changes in the studied motor abilities.

Conclusion. Younger schoolgirls during early puberty are especially susceptible to the development of motor co-ordination. The physical education programs should respect those needs.

Jarosław Domaradzki, Zofia Ignasiak

The level of morphofunctional development of the rural girls from copper mine district in comparison to their sexual maturity

Aim of work: In our work we tried to estimate dependence of level of somatic and functional development from state of sexual maturity (menarche) on background of calendar age.

Material and methods: We used results of investigations of 137 rural girls 12,5 and 13,5 years old. living in Copper Mine District. It was measured: body height and weight, sum of 3 skin-folds – fatty tissue, strength of hand, 1 kg medical ball throw, hand tapping test, sit and rich, time of reaction onto light stimulus, co-ordination eye-hand movement. We used ANOVA to testify statistical differences in means.

Results and conclusions: Results show, that in taken into account calendar age, state of sexual maturity differentiated level of somatic development, strength and speed abilities. Insignificant lower of level of co-ordination ability at more advanced girls was observed also.

Adam Haleczko, Urszula Włodarczyk

Influence of somatic factor on the physical efforts of complex and multidirectional structure

Introduction. Somatic build of the body, especially the body mass, considerably influences a human motor activity. Body mass as well and its composition cause the level of muscle strength of an individual. But the greater values of muscle strength may ambiguously influence the results of individual's motor action in dependence on the structure of this motor task. It causes some troubles in evaluation of the role of somatic factor in situation when a complex motor task is taken into account.

The purpose of the work. Hence objective of the paper is to study the relationship between the structure and function in cases when considered physical effort has a complex and multidirectional character. The multidisciplinary sport events are an example of such efforts.

Material and methods. For the sake of amount and diversity of component events of decathlon, the sports achievements of 100 world best decathletes from 1.01.2004 rank list as well as their somatic features were analyzed. The results of shot-put were taken as a measure of absolute muscle strength of an athlete. Next they were used in construction of two types of indices of relative strength – „traditional” and „regressional” i.e. independent on the body mass. The whole sample was then divided into 3 groups of different sports skill and 4 groups of different body build.

Results. Statistical calculations with use of broad correlation analysis made possible to estimate the role which play both basic somatic features and Rohrer index in sports achievements in each decathlon's event. Diverse values of correlation coefficients in separated groups emphasize the importance of somatic factor as well as sports skill of an individual in their reciprocal relation.

Conclusions. The results of analysis allow to formulate the postulate that in research of this type the analyzed sample must be selected from the high trained athletes.

Monika Guskowska

Personality traits and situational factors as determinants of motor activity in youth

The purpose of the work. The aim of this study was to determine situational and personal correlates and predictors of physical activity level in adolescents.

Material and methods. Participants were 289 high school students (93 boys and 196 girls) aged 14-16. The questionnaire *My health* developed by author provided the indices of physical activity level, time spent on viewing TV and doing homework, somatic complaints, self rating of health status and physical fitness. The standard questionnaires to assess psychological variables and *International Physical Fitness Test* were used.

Results. The results indicated significant but weak correlations between time spent on intense exercise and stable characteristics of individual as well as situational factors. Gender, physical fitness, extraversion, agreeableness, self rating of physical fitness and somatic complaints were significant predictors of physical activity level.

Conclusions. These predictors were differentiated according to gender. Situational factors played more important role in boys, personality traits – in girls.

REVIEW PAPERS

Paul S Glazier, Keith Davids, Roger M Bartlett

Dynamical systems theory: a relevant framework for performance-oriented sports biomechanics research 2

Dynamical systems theory has emerged as a viable framework for modeling athletic performance, owing to its emphasis on processes of coordination and control in human movement systems. Here we review literature on the performance aspects of fast bowling in cricket to exemplify how the qualitative and quantitative analysis tools of dynamical systems theorists—variable-variable plots, continuous relative phase analysis, cross correlations, and vector coding—can enrich the analysis of segmental interactions in performance-oriented sports biomechanics research. We also indicate how multiple-individual designs combined with analysis tools such as coordination profiling and self-organizing neural networks will help reveal the nature and role of movement variability that is often obscured in conventional studies of groups of subjects.

Malgorzata Żychowska

Genetics of chosen psychomotoric and physiological traits in human: methodology and state of experiments

The purpose of the work. The aim of the study was review of fundamental model of establishing strength of genetic conditionings of quantitative traits.

Methods. Methods of variance analysis were presented with respect to assortative mating , intergenerational differences and different connections between relatives. Methods of heritability estimation using family materials were described , too .

Results. The Author's pointed to necessity oh relative treatment of heritability indices , limited to population under study. Actual state of knowledge dealing with genetic conditionings of some psychomotor and physiological was presented . The Author's pointed to a special value of local population family investigations , very rare , but necessary , besides of ‘‘ new ‘‘ mathematical methods (for egsample path analysis from 1934).

DISCUSSIONS

Wiesław Osiński

Physical fitness and the human motoricity researches: dispute about basic construct is still actual

The study highlights the relation between the concepts of physical fitness and human motoricity. It provides insight into the assumptions of the intensive research on the structure of human motor fitness carried out in Poland in recent years. That research and discussion was essential for the identity of Polish antropomotorics evolving into the research field and the academic teaching discipline. However, the issue of defining the basic categories was not raised then. Following the contemporary and main world tendencies the classification is based on the division between the components of health - related fitness and those which are performance – related. The physical fitness concept used as the basic category in Poland does

not convey the essence of the English '*physical fitness*' phrase. This results in some essential disputes over for example, the problem whether body composition components are an integral part of physical fitness or they just determine it.

Wacław Petryński

Internal movement models – do they exist or not?

The paper deals with the problem arising at the conference “Motor Control 2004” (Wisła, October 2004). At first it is necessary to build a firm notion basis for further analyses, or define clear and unambiguous terminology, to enable creating reliable scientific models. There are employed different codes of descriptions – e.g. verbal, mathematical or graphic – and coincidence of various versions of the same model constructed with different “building stuff” testifies to correctness of it. Unfortunately, in motor science there is used mainly verbal code. Moreover, it is not precise enough. Then, it seems to be necessary to appoint an international terminology committee compiling international encyclopedic motor control dictionary. At present it is possible to distinguish two kinds of motor control descriptions: discrete and continuous ones. To the first category belong simple models of central control, e.g. Schmidt’s scheme, more complicated by Wolpert and Kawato (inverse and forward models), or yet more complicated by Hossner and Künzell (models of desired, expected and actual performance). To the other category belongs e.g. Equilibrium Point Hypothesis by Feldman and Latash. It assumes the existence of three dimensional field representing the activation threshold of muscles (\ddot{e}), resulting in developing the forces by them. In such a model the activation threshold depends on the position in the space, where the muscle is currently activated. Summing up, the models, being immaterial items, are basic images of reality in science. Thus building them seems to be a fundamental task of motor science.

REVIEWS

Edward Mleczko

The problem of the human motoricity – Tadeusz Rynkiewicz’s monograph “The structure of the motor capabilities and their global and local forms” – in bit different way

In the Rynkiewicz’s monograph the problem of the relation between the global and local capabilities has been undertaken. There is a scarcity of the complex solutions to the problem of the relation between the conditional and coordination motor capabilities. What is more only few researches into precise evincing of the various motor capabilities have appeared. Considering the importance of the problem, an attempt at finding its solution has been taken up. Tadeusz Rynkiewicz, knowing the importance of the subject, decided to pick up the gauntlet. That is the reason for having tested the global and local evincing of the conditional and coordination motor capabilities, which still are the open questions. The research has been carried out on the group of the 176 male students and, in order to estimate the sexual dimorphism, the result obtained by testing the female students have been included. Of all the values involved in the measurements 25 representatives have been chosen. The results of the research have been compiled with the basic and advanced statistical methods. As the monograph’s author claims, the ambitious task

has been partly accomplished. Because of this statement the problem taken up in the research requires further observation based on the research material which varies in the age body build, sex and occupation, as well as in the sport achievements. The discourse is very interesting mainly because of the cognitive and practical aspects.

It can be interesting to each person who is engaged in the human motoricity problems.

Krzysztof Kusy

Wiesław Osinski, *Antropomotoryka* (2nd expanded edition), University School of Physical Education, Poznań (Poland), 2003

Osiński's "*Antropomotoryka*" ("*Antropomotoryka*" 2nd expanded edition) is the most complete synthesis of the human movement theory in Poland until now, theory defined as generating and integrated knowledge encompassing the whole of human motoricity with its complicated manifestations and determinants as well as connections and relationships. As a leading idea the author chooses the concept of health-related fitness that is a novelty in Poland. The volume includes almost four hundred pages, consists of nineteen chapters and numbers about 730 items of references enclosed – original journal articles, monographs, textbooks, conference proceedings etc. – written by recognized Polish and foreign scientists. Thus, persons especially interested in any of the presented problems have a chance to reach an indicated source and to broaden their knowledge. The reviewer is of the opinion that Osiński's "*Antropomotoryka*" ("*Antropomotoryka*") should be promoted not only as a cheap teaching aid. It would be an insult to the author. Quite a lot of professionals will surely also reach out for this valuable textbook. The reviewer expresses his enthusiastic opinion of the work but he hints that the layout standard of the next editions should match the high level of contents at last. However, all specialists should acquaint themselves promptly with "*Antropomotoryka*" without waiting for more colourful edition because it is just worth reading.

ANNOUNCEMENTS

Wacław Petryński

"Motor Control 2004" Conference