

ANTROPOMOTORYKA**CONTENTS**

DISSERTATIONS AND ARTICLES

Janusz M. Morawski

Human body motion resource management in systems perspective

Adam Haleczko, Ryszard Jeziński, Leszek Korzawa, Ewa Misiołek, Urszula Włodarczyk

Forms of selection and sports aptitude identification in a choice for sport training

Jerzy Januszewski, Edward Mleczko

Basic somatic features versus physical activity tested in the terms of health-related fitness convention in selected periods of ontogenesis

Marzena Jurgielewicz-Urniaż, Jerzy Urniaż

The somatic and motoric development of polish warmia and mazury residing first class junior high school pupils in the light of similar kujawy and pomorze region research

Daniel Puciato, Władysław Mynarski, Michał Rozpara, Bogusława Graczykowska, Bożena Królikowska

The morfofunctional growth level of children and young people in age 8–16 years in relation to their families' income

Jadwiga Pietraszewska, Anna Burdukiewicz, Justyna Andrzejewska, Aleksandra Stachoń, Krystyna Chromik

The morphological differentiation of 7- and 14-year-old boys on the background of explosive strength development

Tomasz Pałka, Grzegorz Lech, Aleksander Tyka, Wanda Pilch, Szczepan Wiecha

Physical capacity and body composition of professional judokas and non training men

Wacław Mirek, Edward Mleczko

Long-term trends of changes in the accomplishment of training load in annual macrocycle of polish medium and long distance runners in junior category

Piotr Makar, Alicja Pęczak-Graczyk, Grzegorz Bielec, Stanisław Przybylski

Enhancement of individual swimming technique effectiveness as a criterion of development the sport results

Janusz Maciaszek, Monika Stefaniak, Renata Śleboda

Effect of frequency tai chi training on functional fitness among elderly men

REVIEW PAPERS

Wacław Petryński

On facts graveyards and Bernstein's pseudo-problem

DISCUSSIONS

Józef Drabik

Physical activity as a manifestation of patriotism

Human body motion resource management in systems perspective

The paper presents an unconventional approach to human body motion investigation by way of management of motion resources attached to three basic factors: Information, Energy and Structure. The Information factor is related to the activity of nervous system and the brain. Energy refers to the supply provided by nutrition, breathing and cardiovascular systems. Body Structure is the place where information and energy meet effectively in presence of limitations imposed by skeletal structure and where the body motion takes its eventual shape. The distinguished three resources are subject to the environment that, in turn, may provide some additional resources and/or limitations. The final solution of the motion tasks results from the system integration of the resources or their elements into a compact whole. As a result some new quality, the so-called system effect may appear which, when properly used, can be essential for the motion effectiveness. The hypothesis has been derived that the system approach is inherent in some natural behavioural patterns of the *homo sapiens* species.

Adam Haleczko, Ryszard Jezierski, Leszek Korzewa, Ewa Misiołek, Urszula Włodarczyk

Forms of selection and sports aptitude identification in a choice for sport training

Preface. Within the confines of action called “More sport for young Wrocław” organized by Youth Sport Centre (YSC), the project of an assessment of motor abilities of Wrocław children was elaborated. On the basis of the probe research done in two schools the detailed description of the adequate set of measurements was prepared, which, after approval by the YSC management, was used in the following study. An instruction how to make the measurements as well as a discussion of basic principles of selection and choice of sports gifted children was published in “Antropomotoryka” (no. 45). There were also presented the results of the probe research of 10 years old children. Owing to the limited volume of cited publication the more detailed information about selection forms and talent identification are given in this article. In references the papers cited in previous publication were omitted.

Introduction. There are two general factors conditioning the professional sport: natural selection and qualification with use of the scientific methods and measurement tools. Opinions of followers of the first and second factor as well as opinions of “neutral” people, who not express the extreme view on a subject, are presented in turn. Mr. Pac-Pomarnacki, the editor of “Sport Wyczynowy” journal, after summing up different opinions both theoreticians and experienced trainers, stated that there is huge diversity of opinions concerning application of scientific methods of identification of somebody's aptitude for sport. Nevertheless many authors emphasise an importance of the hereditary traits. They pay special attention to motor abilities because the extend of its amplifying depends on the force of a genetic control of these abilities as well as on a genotype of an individual.

Aim. To complete an information given in the previous publication (Anthropometrica, No 45) about the selection of sports gifted children and verification of the assumptions taken in this probe research.

Material and methods. Children from the third form in 14 Wrocław grammar schools were the subject of research. Description of measurements and methods of calculation of final assessments were presented in previous paper. Age, somatic traits and results of 5 motor trials in sample of 312 boys and 307 girls were taken into account.

Results. Statistical analysis showed that the mean values were not significantly different from the averages found in the probe research. However, due to the diversity of abilities of children in schools taken into account, the variability of the results was greater. The results of all 5 applied motor trials highly correlated with that obtained in the probe research. Very high correlation of 4-trial set with the complete 5-trial set made possible to simplify the measurement procedure by elimination of one trial giving the least information. In final estimation, apart the basic product index, also the sum index and T-scale scores were used. Evaluations based on the sum index was similar to that based on product one. The most difference was observed when sum of T points was applied. From the other

side the great values of correlation between the product index and the motor index of the relative strength enables to use the last as a simplified and shortened version of evaluation of the motor ability.

Conclusions. The applied method is not fully satisfying due to the lack of adequate tests of evaluation of muscle relax ability as well as sense of motor rhythm. However, it can facilitate the selection. Its efficacy could be assessed after several years of application.

Jerzy Januszewski, Edward Mleczko

Basic somatic features versus physical activity tested in the terms of health-related fitness convention in selected periods of ontogenesis

Introduction. How to evaluate physical activity is still open to question, despite many years of research conducted in search for answer. We can observe the need to include developmental factor in the evaluation of recent implementations for measuring human kinetics components but all the methods of introducing this factor to relativize physical activity in school environment seem to be disputable.

Aim of the research. 1. To recognize the role of particular developmental biological age components in the diversification of selected physical activity components examined in the terms of H-RF convention. 2. To determine in main periods of ontogenesis the effectiveness limit for the methods of relativization of the convention's basic components of physical activity using the traditional formula for calculating the developmental biological age.

Material. Among 6353 boys at the age of 9–18, tested in 1996–2005 in Małopolska region, 150 individuals in three age groups of 9–10, 13–14 and 17–8 were chosen. After that, selected community was divided into 3 groups, each 50 individuals. The criterion was the level of height and weight. To estimate statistical analysis only subjects form two extreme ranges of variables were considered.

Methods. In the age groups and the extreme fractions group of the tested, the \bar{x} and SD values of the physical activity components in the terms of H-RF convention were estimated. It enabled to normalize the 0 and 1 level of the intergroup differences as well as to describe the statistical significances. To estimate the strength between the independent variables (the height and weight levels) and dependent variables (physical activity components in the terms of H-RF convention) Pearson correlation and part-correlation methods were used. The significance of the intergroup differences and correlation coefficients were tested by t° -Student test.

Results. The part-correlation has revealed no significant role of the calendar age in determining the developmental biological age of individuals. The body mass age and, to a lesser extent, the body height age and life length alike had an influence on the numerical value of tested groups. Calendar age did not always affect the diversity of motor and functional components of individuals.

Conclusions. Everything indicates that in order to do relative physical activity evaluation of boys in connection with their progressive development in the terms of H-RF convention there are good reasons to use abbreviated formula of calculating developmental biological age (the quotient of mass age and body height age) of individuals passing over their chronological age.

Marzena Jurgielewicz-Urniaż, Jerzy Urniaż

The somatic and motoric development of polish warmia and mazury residing first class junior high school pupils in the light of similar kujawy and pomorze region research

Aim of the Research. The assessment of somatic and motoric development of Polish Warmia and Mazury residing first class junior high school pupils and the comparison of the obtained results with the ones found in a similar Kujawy and Pomorze region Research.

Material and Methods. The empirical basis for the presented analysis and a follow-up discussion has been formed on the grounds of the research of 1566 girls and 1537 boys (born in 1992), residents in the Warmia and Mazury region attending the first classes of the local junior high schools in the fall term of 2005/2006 and the results

of a similar research carried out in the Kujawy and Pomorze region. Both researches were carried out with the application of the diagnostic survey method. The somatic development was established on the grounds of the height and the body mass of the pupils and the motoric one – with the application of the International Test of Physical Efficiency.

Conclusions. The analysis of the collected data shows that the somatic development of the pupils from the Warmia and Mazury region approximates the results obtained in the research carried out in the Kujawy and Pomorze region. At the same time, both the boys and the girls from the Warmia and Mazury region revealed in most of the attempts a higher level of motoric efficiency when compared to their peers from the Kujawy and Pomorze region.

Daniel Puciato, Władysław Mynarski, Michał Rozpara, Bogusława Graczykowska, Bożena Królikowska

The morfofunctional growth level of children and young people in age 8–16 years in relation to their families' income

Aim of the work. The purpose of the thesis is to define relations between somatic build and motor ability of children and young people and evaluation of income obtained by their parents.

Material and methods. There have been examined 524 pupils aged from 8 to 16 attending the primary school and the junior high school in Jedlina-Zdrój. During gathering the empirical material the method of observation of somatic and motor growth level was used together with the following research tools: anthropometry and motor ability tests. Height, weight and three skin-fat folds have been measured in the children. Relative body mass index and lean body mass have been also calculated. Physical ability tests have been carried out as well: plate hand tapping, 10×5 m shuttle run, standing broad jump, sit-ups, 1kg medical ball throw and sit and forward reach as well as maximum anaerobic power has been calculated. A diagnostic poll was used as a method of analysing, the research tool was a poll questionnaire referring to family life quality. Evaluation of own income was one of the analysed partial subjective elements of life quality.

Results and conclusions. Evaluation of own income made by the surveyed parents differentiates all the analysed somatic features of the examined children from Jedlina-Zdrój, besides the sum of skin-fat folds in female groups. Children from families, which evaluate their income as the worst of all, feature the lowest somatic growth level, the ones from families evaluating their economic status as medium or high feature the highest somatic growth level. As regards motor components the similar relations were noted in case of the maximum anaerobic power at both sexes and locomotive speed in male groups. The average values of maximum anaerobic power increase as the evaluation of the family economic situation improves. Boys from families evaluating their income as the best of all feature the best developed running speed, the worst running speed is developed at boys which families evaluate their income as medium.

*Jadwiga Pietraszewska, Anna Burdukiewicz, Justyna Andrzejewska,
Aleksandra Stachoń, Krystyna Chromik*

The morphological differentiation of 7- and 14-year-old boys on the background of explosive strength development

Aim of the work. The aim was to investigate the possible differences in body structure and other force abilities of seven and fourteen-year-old boys. The results of the standing long jump, which measures the explosive power, was a criterion of division of these two groups.

Material and methods. The material includes measurements of the 7 and 14-year-old boys (n = 151). The data are part of the longitudinal research. The following traits were analyzed: body height, weight, extremities length, biepicondylar breadths, body circumferences, skinfolds and components (endomorph, mesomorph, ectomorph). The strength abilities were estimated by standing long jump, ball throw for distance and grip strength. In the groups selected by use of k-means method, a statistical analysis was carried out. The standing long jump was the grouping variable. The Tukey test was applied to evaluate the intergroup diversification.

Results. In 7-year-old boys no significant intergroup diversification in morphological features, except for skinfolds, was observed. It results in significant differences in the fat percentage and the level of endomorphy development. The motor tests show significant differences only in grip strength evaluation. In three groups of 14-year-old boys significant differences in body height, body mass and skinfolds were observed. The results of the remaining motor tests diversify the distinguished groups.

Conclusion. The rate of development in somatic and functional traits is diversified. In younger boys the level of development of explosive strength is connected with different body fatness. In adolescence there are also another determinants of strength abilities: body height and skeleton massiveness. With age, the functional abilities become stronger connected with morphological structure.

Tomasz Pałka, Grzegorz Lech, Aleksander Tyka, Wanda Pilch, Szczepan Wiecha

Physical capacity and body composition of professional judokas and non training men

Aim of the work. The main objective of the present study was to find whether there is any difference in aerobic and non aerobic indexes of physical capacity, between judo athletes and non training persons.

Materials and methods. Seven elite judokas represented middle weight category (9 to 14 years of training status) and 13 non training men as a control group were qualified to the research program. Participants performed aerobic graded test and anaerobic all out test to estimate they performance ability. The indexes estimating morphological body build were calculated.

Results. Judokas and non training men have similar aerobic performance (VO_{2max}). We observed significant differences in anaerobic parameters (PP and TW), lean body mass and lactate concentration in blood after exercise.

Conclusion. The data suggest that specific training in judo athletes develops anaerobic performance. There was influence of the judoka's training on aerobic performance (VO_{2max}).

Wacław Mirek, Edward Mleczko

Long-term trends of changes in the accomplishment of training load in annual macrocycle of polish medium and long distance runners in junior category

Purpose. The main goal was to analyze training load in the category of junior runners in last four decades. The researchers took into consideration the relationship between applied load (volume, intensity ratio) and the results of 800 and 1500 m runs.

Basic procedures. The main interest of carried on analyses was put on the amount of load in the year macrocycle. Rated strength of the relationship between applied load and the result of training for a distance of 1500 m was observed.

Main findings. Extensive increase in training load (especially in the eighties) had no bearing on the results obtained in middle-distance running in the junior category. In next years of their sporting career the competitors specialized in long-distance run. Today a tendency to intensify the process of training young runners in junior category may be noticed, which does not lead to drastic improvement in the results in middle-distance run. It can be also considered as a causative factor resulting in giving up running by respondents.

Conclusion: The largest efficacy result in mens' 800 m and 1500 m distinguished variant intensive training load in the annual training cycle. In determining effectiveness of training load in addition to the junior coaching experience and achievements of sports theory should be used as well as current scientific knowledge.

Piotr Makar, Alicja Pęczak-Graczyk, Grzegorz Bielec, Stanisław Przybylski

Enhancement of individual swimming technique effectiveness as a criterion of development the sport results

Aim of the work. The aim of the study was to assess the variability of swimming technique of high-classified female athlete in 3-year training period. The variables of swimming technique were also compared with athlete's sport results.

Material and methods. Female backstroke swimmer, medallist of junior world and European championships took part in the study. In 3-year training period, her maximal velocity on 25 meter backstroke was tested twenty times. All the attempts were recorded by video camera. Basic kinematics variables were calculated from the video record. Pearson's product moment correlation was used to assess the liaisons between the analyzed variables.

Results. In 3-year training period, swimmer's maximal velocity developed constantly. Increase of swimming speed was correlated significantly with the stroke rate and the stroke index. Significant relations between stroke length and velocity were not revealed. The highest values of stroke index were found during 100 m backstroke race.

Conclusions. Current control of the kinematics variables is essential in swimming training. Systematic and objective evaluation of swimming technique is very useful in planning individual training loads to develop maximal velocity.

Janusz Maciaszek, Monika Stefaniak, Renata Śleboda

Effect of frequency tai chi training on functional fitness among elderly men

The aim of the study. To determine the influence of the participation frequency in Tai-Chi training among elderly men on their functional fitness level and BMI.

Material and methods. The 30 healthy men aged 65 to 82 ($\bar{x} = 72 \pm 4,8$ year old) participated in the experiment. In the first experimental group "A" attended 21 men taking 4-month, twice a week systematic physical activity. The second experimental group "B" constituted 9 men trained irregularly, usually once a week. Both groups, "A" and "B" participated in the identical Tai-Chi training.

Before and after 4-month training the measurement of the strength of legs, agility/dynamic balance, aerobic endurance, flexibility of the lower body were done. There were used the trials of the "Senior Fitness Test" [Rikli and Jones 2001]. Furthermore, the body height and weight was measured and next the BMI index was calculated.

Results and conclusions. The results indicated that in fifth taking into consideration measured variables, i.e. strength of legs, agility/dynamic balance, aerobic endurance, flexibility of the lower body and BMI, the results of only one – agility/dynamic balance – have changed statistical significantly ($p < 0,05$) in group "A" comparing to group "B". In this experiment it was established, that the difference of the participation frequency (once or twice time per week) in Tai-Chi training has no important influence on the functional fitness level changes in elderly men. Group "A" trained systematically twice a week as well as group "B" trained only once a week has gained very similar results.

REVIEW PAPERS

Wacław Petryński

On facts graveyards and Bernstein's pseudo-problem

The author refers to J. Morawski's work about applications of bionics in anthropokinesiology. He underlines importance and necessity of theoretical works, because collecting only the experimental data is not sufficient and it does not ensure real progress in sciences on physical culture, especially in most theoretical of them, i.e. motor science. It seems justified to refer to five-level motor control model and pseudo-problem by Bernstein. Thus it is

possible to build a pattern of information processing in a human during motor control process, consisting of the blocks "Attention", "Mind" and "Prudence". Such an approach enables establishing the limits of meanings of the terms "attention", "mind", "prudence", "awareness", "instinct", "intelligence" and "intuition" while adopted in motor control. It was shown also the model "meaning-text" by I. Melchuk and its usefulness for description of the mental processes in motor control. Author discusses and explains the terms "trainability" and "exercisability", as well as the problem of system dynamics in motor control. He describes the disadvantageous results of uncritical adoption of statistical methods ("motor abilities", "fluid intelligence", "crystallized intelligence"). On the basis of presented analyses he points out to the limits of application of various research methods and the necessity of development of theoretical methods in sciences on physical culture.

DISCUSSIONS

Józef Drabik

Physical activity as a manifestation of patriotism

After explaining the basic concepts, such as physical activity and patriotism, the author justifies the title of the work. From his viewpoint, physical activity is a sign of patriotic attitude towards civic duties as the specific act of courage, duty to others and a gift for them, restoring the dignity, the expression of concern for the state and the condition for public health.
