

ANTROPOMOTORYKA

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ANTROPOMOTORYKA

SUMMARY

DISSERTATIONS AND ARTICLES

Jerzy Januszewski, Edward Mleczko

Morphological Age and Selected Components of the Health-Related Fitness (H-RF)

Introduce. Despite the long period of conducted researches, the problem of the physical activity evaluation still remains open. There is some consciousness to include the development factor in the evaluation of the newer human kinetics measurement components, however any methods to be inducted to relate the physical activity in the school environment seem to be disputable.

The goal of the researches: 1. To find out what is the function of the particular morphological age components in diversification of the individual components of the physical activity according to the health convention. 2. To describe, in the main periods of ontogenesis, the effectiveness limit of the relativeness methods of the physical activity convention's basic components using the traditional formula estimating the morphological age.

The subject. Among 6353 boys at the age of 9–18, tested in 1996–2005 in Małopolska region, 150 individuals in 3 age groups of 9–10, 13–14 and 17–8 were chosen. In total, the results of the basic components of the physical activity elements (morphological, skeletal-muscular and circulatory-respiratory) deriving from 900 male individuals from primary and secondary schools of the Polish regions (Małopolska, Podkarpacie, and Świętokrzyski) were taken under consideration. Such selected community (each 150 individuals) was divided into 3 groups (each 50 individuals). The division criterion was the morphological age, which was the biological development measurement. To estimate the statistical analysis only subjects from two extreme variables ranges were considered. Because of the numerical criterium of the diversion the cohort's, extreme fractions above 67 and below 33 centile could be considered. The other numbers of the tested located close to the median were not included in further statistical analysis.

Methods. In the age groups and the extreme fractions of the tested, chosen according to the morphological age, the SD value of the physical activity components enclosed in H-RF was estimated. It enabled to normalize the 0 and 1 level of the intergroups differences and to describe their statistical significance. To estimate the strength between independent variable (the morphological age) and dependent variables (the physical activity of H-RF components) Pearson correlation and part-correlation methods were used. The significance of the intergroups differences and correlation coefficients were tested by t-Student test. The arithmetic means and Pearson correlation and part-correlation coefficients' values were described as the statistical variables with at least 5% (p 0,05) importance level.

The results. The part-correlation was extremely helpful in claiming there was a great importance of the calendar age in determining the morphological age. The body mass age and body height age, as well as the calendar age had a great influence on the numerical value of the tested male groups. The morphological age influenced mostly on the kinetic and functional components especially among the individuals of the junior and puberty period. The biggest impact of the influence was discovered during such tests of the physical activity as: flexibility, tapping, spatial orientation, VO2 max (relative values), 50 and 1000 m distance run time and standing jump results.

Summary. The results of the advanced statistical method justify not always appreciated need of introducing the calendar age to the mathematical formula describing the biological age. The morphological age complying the body mass age, body height and the life length (the calendar age), can be a factor deducting the biological development from the kinetic and functional components of the physical activity in the health convention. From the adolescence period the morphological age influence on described parameters suppresses.

Tomasz Boraczyński, Vadim Zaporozhanov, Jerzy Urniaż, Adam Sawicki, Lola Brygida Boraczyńska

The Evaluation of the Level and Correlations of Selected Coordination Motor Abilities
of Physical Education Students

The aim of the study was to explain the correlation between the parameters characterizing the static dynamic balance of the body, kinesthetic differentiation and time differentiation.

Materials and methods. A group of 227 (171 men of 22.1 and 56 women of 22.8) second-year students of physical education participated in the study. The static and dynamic balance was assessed with the test based on controlling the position of the centre of body mass using a dynamometric platform. Tested person had to keep the cursor (the centre of body mass) at the point moving along a perfect ellipsis on the screen. A hand dynamometer was used to assess the kinesthetic differentiation ability. Tested person had to squeeze the dynamometer with a force of 100 N less than the maximum value defined at the beginning of the test. Time differentiation was assessed with a Heuer 1030 stopwatch; tested person had to time ten-second periods for ten repetitions without looking at the stopwatch.

Results. Statistic analysis of the collected data did not show statistically significant differences between the groups of men and women. Pearson's linear correlation and Spearman's rank correlation tests pointed to a very weak correlation (statistically insignificant) between the test results, directed at the assessment of three different coordination abilities.

Conclusions. Numerous differences among the participants' test results point to different levels of their coordination motor abilities. Very few statistically significant differences between the test results of males and females suggest that a participant's sex has very little influence on their coordination motor abilities. Very little values of correlation coefficients of individual tests suggest that there are no significant interrelations among the studied abilities. It also proves that these are very specific abilities. Using the mentioned tests to assess the general predisposition for selected coordination motor abilities seems to be justified.

Andrzej Szwarc

A Model of Offensive and Defensive Actions in the Women's Soccer

The aim. The purpose of this work was to present a model, which shows the efficiency of the actions in the women's soccer, based on observations of 8 the tournament matches during the *Algarve Cup 2007* in Denmark and championship in year 2007.

Material and methods. The successful teams were analyzed, from the quarterfinals to a final matches. Actions, efficiency and reliability, during both offensive and defensive actions, were subject to this examination.

Results and conclusions. It has been ascertained that the most effective actions are at possessing of a ball and those of gaining the space; and scoring goals is the same as that which had been observed during finals in other top men's soccer tournaments. Additionally, the best women-players manifest low and average reliability in all kind of actions.

Magdalena Krzykała, Jan Konarski

Body Composition of Field Hockey Players in Periodical Structure of Training

Purpose of the work. The aim of the present study was to assesses the training effects on the level of body composition in field hockey players (in the time structure of training).

Material and methods. Elite field hockey players (n = 14) were examined four times in an outdoor training cycle. Each time measurements of body height and body mass were done. Besides, their level of body composition was monitored with the use of Body Impedance Analyser.

Main findings. The study showed that the highest body mass level was characteristic for the fourth stage of the examinations – transitional period, i.e. time for rest, where as during the first three stages it was very similar. The fat mass also changed in the observed training cycle. The highest level was indicated for the first and the last stage of research. The analysis of individuals shows further changes within the body composition level. The body mass changes were not large, however the level of the fat mass was different in particular individuals. Water-component, which plays an extremely important role in sport, also responded to the activity stimulus and changed during the stages of research

Janusz Jaworski, Katarzyna Sterkowicz-Przybycień

Verification of the Influence of Learning on the Results of Chosen Computer Tests of Coordinating Motoricity Abilities of Schoolchildren of 14 Years of Age

Material and methods. The study material has been constituted by the results of research of a group of 15 schoolchildren of 14 years of age, made in 2006. An attempt that was not recorded was made before the first

evaluated test. Then each test was made three times (in 3 consecutive days) with a tested person, with the same test procedures (computer equipment, time of the day, outdoor conditions, and research maker) retained. 26 different characteristics connected with motricity coordination of a man have been received. The gathered material has been worked out with basic statistical methods counting: \bar{x} – , SD. In order to verify the influence of learning on tests' results the method of variation analysis ANOVA for dependent attempts has been used. If the zero hypothesis on the lack of difference between arithmetic mean had not been confirmed, it was checked which of them were responsible for the rejection of hypothesis by the Tukey's test "post-hoc" for equal N.

Results and conclusions. No statistically important influence of learning on the researched test CMA results between first and second measurement has been observed. Only a three times repetition "day after day" of each test with the checked person has shown statistically important improvement of CMA computer test results – in comparison to the first check. To sum up, only the results of the third check should be treated as a joint effect of influence of learning and the level of the given coordinating ability. The received results confirm the usefulness of the suggested computer tests for the research of chosen coordinating abilities.

Agnieszka Jastrzębska, Bartosz Ochmann, Marek Zatoń, Ewa Bakońska-Pacoń, Iwona Wierzbicka-Damska, Ryszard Blacha

Balance Ability in Alpine Skiers and Biathlonists

The aim of the study. The posture control is contributing by interaction of different orientation senses and motor control centers. The aim of this study was to define the level of neural coordination in alpine skiers (AS) and biathlonists (B) using the stabilography .

Material and methods. 21 alpine skiers BM $63,3 \pm 8,58$ [kg], height $167,2 \pm 8,84$ [cm], age $16,7 \pm 2,11$ [yr] and 22 biathlonists BM $66,1 \pm 7,59$ [kg], height $174,4 \pm 6,88$ [cm], age $19,1 \pm 1,52$ [yr] took part in experiment. Subjects were required to stand on the platform which identified the location of mean pressure forces on the ground. Body sway was measured under each of following conditions: eyes – open (I), eyes – closed (II) and visual feedback (III) conditions, every time by 32 sec.

Results. 3 of 14 parameters were significantly poorer under eyes – open and eyes – closed conditions in AS vs. B. Under visual – feedback condition AS had significantly poorer results than B except parameters of velocity sd in lateral and anteroposterior sway. Visuo-motor coordination is significantly higher in B (86,6%) than in AS (70,5%). The comparison inside groups shows univocally poorer stability with eyes – closed in both groups and poorer stability in AS group under visual – feedback condition.

Conclusions. The mechanism of static equilibrium in biathlonists is much efficient then in alpine skiers. Also biathlonist characterized better visuo – motor coordination.

Dariusz Tchórzewski, Marek Szczygieł, Marek Palik

The Level of Coordination Motor Abilities among Candidates to ZSMS in Zakopane

Problem. The aim of the research was qualification of diversification level in the range of coordination motor abilities between candidates to secondary and high school – SMS in Zakopane. The following hypothesis were formulated: 1. Level of coordination motor abilities are higher in the case of candidates to high school then to the secondary one. 2. There are no differences in particular coordination motor abilities between sexes in the given groups.

Methods. Material of this research is based on results of the examined candidates to secondary and high school, ZSMS in Zakopane. 62 individuals took part in the research (23 candidates from secondary school and 39 candidates from high school). Instrumental measurements of: temporary spacial orientation abilities, speed of reaction and dynamic balance measurements were made. The following apparatus were used: Piórkowski apparatus US-6, crossed apparatus AKN-102, speed reaction measurer MRK 80, and balance Libra platform. To the group of coordination abilities test of agility – envelope run, was accepted.

Results. The diversification of temporary spacial orientation in both tested groups was found. But there are no significant differences in the level of dynamic balance and speed of reaction. Higher sex mobility was found in the group of candidates to the secondary school. But in both groups the differences were not statistical significant.

Conclusion. 1. High school candidates exceeded secondary school candidates in the case of coordination motor abilities only in temporary spatial orientation. There were no differences between levels of dynamic balance and

speed of reactions found. 2. There were no statistically significant differences in the range of sex in both tested groups.

REVIEW PAPERS

Wacław Petryński

Contemporary Version of Bernstein's System of Movements Construction

The author has called attention to the fact that, according to the incompleteness theorem formulated by K. Gödel, anthropokinesiologists come across some unsolvable incoherencies. When significant inconsistencies become more numerous, it becomes necessary to introduce new premises into the theory. In anthropokinesiology such premises may be: the hypothesis that sensory code enables efficacious information processing, including formation of theories, as well as the rule of scales conformity as by J. Morawski. In anthropokinesiology very important is also the fact that psychology does not provide the science with clear unambiguous definitions of notions important for movement control in humans. So, it is necessary to formulate appropriate descriptions. Taking as a basis the Bernstein's theory, supplemented with the premises already mentioned, the information processing has been analysed from the moment of the occurrence of stimuli in an environment. The author followed through the following processes: stimuli reception, sensory inputs production, selective amplification of information carried by sensory inputs (psychological factors), perceptual chunking, making up for missing information (if necessary), using of instinct, intelligence and intuition at various levels of movements construction system, creation of a response, using efferent copies at particular levels, selective amplification of response and eventually execution of a movement response. Author has presented a new diagram, which among others enables explaining the deterioration of movement quality as a result of "switching off" the automatisms from B-level (muscle synergies, "feeling in hand") and from C-level (space orientation, "measure by eye"). In summary it was emphasised that the proposed model enables compatible joining the ecological theory by J.J. Gibson, equilibrium point hypothesis by A.G. Feldman, scheme theory by R.A. Schmidt, probabilistic prognosis by I.M. Feigenberg or underdetermination theory by E.-J. Hossner and S. Künzell.

DISCUSSIONS

Józef Drabik

About the Level of Some Habilitations in Physical Culture Sciences

In the submitted text, the fragments from habilitation theses are quoted. The quotations were prepared hoping to point out the physical culture studies' danger symptoms. This citations suggest that the level of these works is going down, what refers to some academic environments in particular.

REVIEWS

Bożena Matyjas

Review of the book: Bożena Zawadzka, *The Attitude of Adolescents towards Their Health*

Aim: The aim of the research is to scrutinize healthy and chronically ill adolescents' health behaviours with particular reference to individual and environmental determinants as well as to establish an empirical model of types of their health behaviours. The practical aim is to provide guidelines on how to enrich and modify activities concerning the teaching and educational process.

Material i method: This work is an outcome of research conducted in the Świętokrzyskie province, Poland, among 1572 respondents aged 14–18. The research method was diagnostic probing and document analysis, whereas the HBSC questionnaire to probe health behaviours was applied as a tool. The group of respondents consisted of 33.3% chronically ill respondents and 66.6% healthy ones, out of whom 55% were from urban areas, and 45% from rural. There was a two-stage selection: random selection of the school and then intentional selection of the respondents, where their state of health was the criterion.

Results: The qualitative and quantitative analysis, which made use of specific statistic methods (e.g. factor analysis), let the author establish the empirical model of types of adolescents' health behaviours. The results revealed that 27.7% of adolescents show positive health behaviours in some areas (e.g. nutrition, physical activity), whereas 28.2% display health-risky behaviours. The analyzed variables such as sex, age, wealth, atmosphere and support at home diversify the research results at the level of $p < 0,05$; $p < 0,01$ as far as self-

assessment of one's health, physical activity, satisfaction with one's own life, nutrition and health-risky behaviours are concerned.

Conclusions: Health activity of both healthy and chronically ill pupils is insufficient. Adolescents, especially chronically ill pupils, cannot properly assess their state of health, The results of the authors' own research as well as the analysis of other authors' results led to the conclusion that there is a strong need to introduce a separate subject "health education" to school education at the level of secondary school and above.

ANNOUNCEMENTS

Włodzimierz Starosta, Monika Piątkowska, Katarzyna Pec

New Ideas and Tendencies in Sport and Physical Culture Sciences from the Perspective of ICSSPE

W dniach 7–10 października 2007 r. w Akademii Wychowania Fizycznego Józefa Piłsudskiego w Warszawie odbyły się posiedzenia ciał statutowych Międzynarodowej Rady Nauk o Sporcie i Wychowaniu Fizycznym (ICSSPE – *International Council of Sport Science and Physical Education*) oraz towarzyszące im sympozjum naukowe nt. *Nowe idee i tendencje w naukach o sporcie i wychowaniu fizycznym*.

Jego celem była wymiana poglądów pomiędzy członkami ICSSPE z różnych stron świata a polskim środowiskiem związanym z naukami o kulturze fizycznej. W obradach ciał statutowych ICSSPE oraz w sympozjum naukowym uczestniczyli przedstawiciele dwudziestu pięciu krajów. W sympozjum wziął natomiast udział prezes Polskiego Komitetu Olimpijskiego Piotr Nurowski oraz prezes zarządu Fundacji Edukacji Olimpijskiej doc. dr Kajetan Hądzelek.

Program naukowy sympozjum był bardzo bogaty. Delegaci z różnych kontynentów przedstawili z lokalnego punktu widzenia problemy związane z naukami i sportem i wychowaniem fizycznym. Wystąpili: prezydent ICSSPE prof. G. Doll-Tepfer z Niemiec oraz profesorowie: W. Starosta z Polski, R. Lopez de D'Amico z Wenezueli, D. Kluka i A. Goslin z RPA, J. Maguire z Wielkiej Brytanii, L.O. Amusa i A.L. Toriola z Afryki Południowej, W.D. Brettschneider z Niemiec.