

# ANTROPOMOTORYKA

## CONTENTS

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Information for the Authors

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### DISSERTATIONS AND ARTICLES

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**Tomáš Malý, František Zahálka, Pavel Hrásky, Miroslav Čada, Josef Dovalil, Lucía Malá**

The comparison between the speed of the serve and the chosen biomechanical parameters of the serve in the training and match conditions in the women volleyball

**Waldemar Makula**

Values of physical culture and the participation in movement of the Third Age University Students in Cracow

**Marta Bursova, Jana Langmajerova, Ladislav Cepicka**

Postural function as one limiting factor of the level of motor performance and possibilities of its correction during school day education by children of primary school age

**Anna Demuth, Jarosław Janowski, Urszula Czerniak, Magdalena Krzykała, Marek Sokołowski, Ryszard Strzelczyk, Ewa Ziółkowska-Lajp**

Sexual dimorphism morphological and motor characteristics of soldiers women

**Urszula Czerniak**

Functional and morphologic asymmetry of upper limb among women after mastectomy

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

Estimation of condition and coordination abilities in ten-year-old children within the confines of sport training selection

**Jaremi Grześkowiak, Dariusz Wieliński**

Comparison of selected physical activity parameters of over 65-year-old women researched with the method of the Fullerton Functional Fitness Test with population research leaded in the USA by Rikli and Jones

**Jarosław Domaradzki, Zofia Ignasiak**

Differences in some selected co-ordination skills of young boys and girls – Vienna Test System results

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### REVIEW PAPERS

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**Janusz M. Morawski**

Bionics, modeling and computer simulation in investigation of basic human psycho-motor activities

**Wacław Petryński**

Three abilities on the letter of the alphabet „i”: instinct, intelligence and intuition

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### DISCUSSIONS

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**Włodzimierz Starosta, Tomasz Jonak**

„Javelin feeling” – its structure, significance, conditions and development in the opinion of the advanced athletes

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### REVIEWS

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**Edward Mleczko**

New academic manual by Joachim Raczek “Antropomotoryka. An outline theory of human motoricity”

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## ANNOUNCEMENTS

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International Conference of Sport Kinetics in Greece

Conference in Rydzyna

Conference in Raciborz

„Didactics of Physical Education” – competition of publications

# ANTROPOMOTORYKA

## SUMMARY

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### DISSERTATIONS AND ARTICLES

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*Tomáš Malý, František Zahálka, Pavel Hrásky, Miroslav Čada, Josef Dovalil, Lucia Malá*

The comparison between the speed of the serve and the chosen biomechanical parameters of the serve in the training and match conditions in the women volleyball

**Introduction.** In the last years of women's volleyball, the spike serve has become more common. The efficiency of the serve in volleyball depends on its precise mastering. We were particularly interested in the difference in the velocity of the spike serve during training and competition conditions as acquired skills are necessary to be presented mainly in competition conditions.

**The aim of the studies.** To compare speed of the ball after jump top spin serve in elite women volleyball players and describe some biomechanical differences between training and competition conditions during this skill.

**Material and methods.** The research set included players of the Slovak national women volleyball team ( $n = 11$ ) participating in the European Champions in 2007. The ball velocity after the hit was monitored by means of the STALKER radar system. To make a more detailed analysis, the player with the fastest serve was selected whose 5 best attempts both in training and in competition conditions were analyzed by means of the 2D kinematics analysis.

**Results.** The average velocity of maximum values in the spike serve in training conditions in women players ( $n = 11$ ) represented  $21,29 \pm 1,86 \text{ m} \cdot \text{s}^{-1}$ . In competition conditions, however, this type of serve was chosen only by 5 players. The average velocity of the best attempts of individual players during the match, however, was  $23,49 \pm 1,03 \text{ m} \cdot \text{s}^{-1}$ . In training conditions, these players reached spike serve velocities of  $22,61 \pm 1,16 \text{ m} \cdot \text{s}^{-1}$ . This difference was not significant ( $p > 0,05$ ). In a more detailed biomechanical analysis of selected parameters, more prominent differences were discovered, which are related to "checked" requirements

**Conclusion.** This study has found that observation and control of condition in the jump topspin serve in women elite volleyball players is important for the sport praxes.

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### *Waldemar Makuła*

Values of physical culture and the participation in movement of the Third Age University Students in Cracow

**Background.** Human ageing has been becoming the common problem not only in the demographic sense. Ageing as an important issue is very often connected with the elderly participation in physical activity. Therefore, the area of axiological foundations, apart from biological approaches to human body, seems to be of great significance. The first step to undertake regular physical activity by seniors is understanding by themselves the basic values of human body.

**Methods.** A sample group of forty-five third age university students at the Jagiellonian University in Cracow has been polled in the year 2002 by using the Scheler value scale and the behaviour inventory.

**Results.** Research conception stating that regular movement benefits good health and that keeping fit enables seniors to be self-reliant people has a fundamental meaning in revealing that the third age university students in Cracow are aware of the role of physical fitness in performing the vitality of their own body, and in enabling them to exist independently.

**Conclusions.** Understanding by the elderly polled the meaning of basic values attributed to one's own body increases their chance of participating in attractive, moderate intensity and physical strength – related forms of movement. However, enabling them to exercise without any additional financial costs also plays a crucial role in this case.

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**Marta Bursova, Jana Langmajerova, Ladislav Cepicka**

Postural function as one limiting factor of the level of motor performance and possibilities of its correction during school day education by children of primary school age

**The purpose of the work.** The quality of postural function takes a share not only in the level of health oriented fitness but it is also inseparable part of every movement (ereismatic movement). To the certain level it can express overall health state of a child (vertebrovisceral relations in the organism). The objective of this research was to offer educators, on the basis of individual diagnostics of postural function, for groups differentiated compensatory movement intervention, which should positively contribute mainly to primary prevention of functional disorders of movement system.

**Material and methods.** To the research sample were designedly selected children of primary school age (1st grade n = 40 and 5th grade n = 46) from randomly selected primary school in Pilsen in the Czech Republic. The evaluation of static part of postural function was done by aspectively modified method with use of diagnostic apparatus DTP-1. After that the examination of selected shortened and weakened muscle groups was carried out. Non-parametric Wilcoxon test and Mann and Whitney U-test were used to statistic processing.

**Results and conclusions.** We confirmed low level of quality of body posture and selected muscle groups of our probands. More than half of the children (52% from the 1st grade and 55% from the 5th grade) were placed to the 3rd group with recommendation of exercise with intentional professional correction. we recommend to implement complex precautions in school practice, which would lead to optimization of movement activity of children and minimizing of static load, e.g. by kinesthetic learning style, alternative sitting position and it should be common to regularly implement compensatory exercises during school day education.

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**Anna Demuth, Jarosław Janowski, Urszula Czerniak, Magdalena Krzykała, Marek Sokołowski,  
Ryszard Strzelczyk, Ewa Ziółkowska-Łajp**

Sexual dimorphism morphological and motor characteristics of soldiers women

**The aim of the study.** To evaluate dimorphism differences in morphological traits and motor abilities between men and women who studied at Land Forces Military Academy in Wrocław.

**Material and methods.** In this study 23 anthropometric traits and 8 motor tests were used. Those features allowed us to determine 5 indexes which describe body proportions. Moreover, the level of body composition (lean body mass, body fat, water) development was estimated using Wielński equations. To assess sexual dimorphism in morphological traits Mollison index and discrimination coefficients  $r$  were used. In case of physical activity, relative quantity of motor abilities tests were described with reference to body mass and lean body mass (LBM). All material, in comparative depiction, is showed in tables and prints.

**Results and conclusions.** In case of our own research, sexual dimorphism – typical for most groups of people – was observed: larger skinfolds and body fat level in women, larger size in other somatic traits in men. Body build estimated in this way; persuade us to reject presumption about typical men characteristics of women from High Officer School. Body morpho-functional differences determine differences in physical activity, about which basic motor abilities decide: strength, speed, endurance, movement co-ordination.

In this connection, it is rather unlikely for women to approach to men possibilities even if they start to practice very intensively. It is very important to remember that training process and requirements for soldier women are the same for both sexes. Therefore, the concern for women soldier professional future appears.

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**Urszula Czerniak**

Functional and morphologic asymmetry of upper limb among women after mastectomy

**Aim of the work.** Estimate of morphologic and functional asymmetry appearance of upper limbs among women after mastectomy due to breast cancer.

**Material and method.** Research, conducted on 104 women associated in Polish Federation of Women after Mastectomy Clubs "Amazonka", took part during the rehabilitation course in 2007. Under research was a group of

somatic characteristics (body height, body mass, body circumferences) and measurement of upper limbs function characteristics (finger muscle strength of left and right hand). The researcher used performed measurements to calculate somatic indexes (BMI and WHR) and to point out the significance of differences between averages of subjects with left side amputation and right side.

**Conclusions.** Material analysis leads us to conclusions: 1. Amazons are characterized with average body height and large body mass, with no difference between different sides of amputation. 2. Body build type of women after mastectomy caused by breast cancer point the appearance of great degree of overweight and obesity, presenting gynoid fat distribution. 3. Radical breast cancer treatment consisting surgery causes minor growth of limb circumferences of mastectomy body side, what is caused by systematic participation in different forms of physical rehabilitation. 4. Proper application of rehabilitation process of women after mastectomy bridges negative results of the surgery itself – in a form of functional asymmetry, allowing by application of physical exercises, the restoration of finger muscle strength.

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

Estimation of condition and coordination abilities in ten-year-old children within the confines of sport training selection

**Introduction.** In November 2007 management of the Youth Sport Center in Wrocław offered to two retired research workers in University of Physical Education Wrocław (dr Adam Haleczko and dr Ryszard Jezierski) to draw up several selection tests enabling to estimate motor abilities of 10 years old children in order to encourage them to do sport. The most gifted children could be included then into training in sports sections cooperating with the Youth Sport Center. Dr Jezierski get about organization matters while content-related side was in dr Haleczko hands, who cooperated additionally with of dr Leszek Korzewa, dr Ewa Misiołek and dr Urszula Włodarczyk.

The research was done in two grammar schools during physical education classes in rather small groups of pupils so as not to disturb the teaching process what, however, prolonged the duration of examination. The study comprising: methods of determination of morphological age and prediction of the final body height was presented to the Youth Sport Center a month after end of research and, as a basic material, the instructions for currying out of certain motor trials together with related score tables (in T-scale). The essence of the study was, first of all, an evaluation of child's condition and coordination abilities with relation to the age and the body build. The examination of relationships: school – parents – children was studied by other group of researchers. Taking into account that efficiency of selection process depends mainly on how its specific demands are obeyed, the description of the crucial principles of sports selection were presented on the basis of relevant literature.

**Aim.** Realization of the tasks presented by Youth Sport Center management.

**Material and methods.** The results were analyzed statistically with use of basic indices and Pearson linear correlations. The quotient index was defined in which product of scores of two condition trails (both-feet triple jump from standing position and chest 1 kg medicine ball put) was in numerator while product of three coordination trials scores (wall bar cross, passage over and under cross-bar, both-feet lateral jumps) formed denominator. Such defined index was signed as index I, while one in which products of scores were replaced by respective sums was signed as index II. The sum of results of five trials expressed in T-scale was applied as the third form of ability evaluation.

**Results.** The gathered material was presented in seven tables where values, steps of variability and relationships between measurements were included. The comparison of usefulness of three variants of summary ability evaluation methods was done on the basis of correlation analysis. Index I seemed to be the most promising, but to some extent it preferred older girls. The correction was possible with use of morphological age, what reduced the influence of somatic factor and decreased the age impact. To complete the presentation the three variants of relative strength indices were also presented. Two from among them because of elimination of the body mass influence on results may be used in comparison of strength abilities of children with different body sizes, increasing thereby the selection efficiency.

**Conclusion.** To judge the prognostic validity of proposed methods of motor ability evaluation, and at the same time the selection efficacy, will be possible only after several years, of course if continuity of research will be kept.

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**Jaremi Grześkowiak, Dariusz Wieliński**

Comparison of selected physical activity parameters of over 65-year-old women researched with the method of the Fullerton Functional Fitness Test with population research leaded in the USA by Rikli and Jones

**Introduction.** Changes in the world demographic structure, connected with increase of people over 65 cause the interest of elderly people's health problems. Demographic data show that the process of community's aging is going on. In connection with this, the areas of danger for this group of population should be circled. The Fullerton Functional Fitness Test enables the key parameters's assessment for the fitness of elderly people.

**Aim of the work.** The purpose of the study is to indicate the difference between results of own research and the results raised in the USA with the Fullerton Functional Fitness Test method.

**Material and methods.** The research group was 64 resident women from 3 Adult Day Care Centers (DDPS) in Poznań. In this group were women, who reached 64–98 years of age. The research was carried out with the Fullerton Functional Fitness Test.

**Results.** Results concerning all of the estimated parameters in population of women living in Poznań are worse than women living in the USA.

**Conclusion.** Preventive programmes for people over 65 directed precisely to areas of physical activity danger responsible for the functioning of elderly people should be created. For the sake of different elderly people's relation to effectiveness and purposefulness of rehabilitation it is advisable to carry on research in the age group every 5 or 10 years.

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**Jarosław Domaradzki, Zofia Ignasiak**

Differences in some selected co-ordination skills of young boys and girls – Vienna Test System results

**Aim of work.** In our work our we tried to estimate sexual differentiation in some selected co-ordination skills of young boys and girls.

**Material and methods.** We used results of investigation of 37 boys and 47 girls aged 8-9 living in Polkowice town. Two-hands co-ordination (*Zweihand*), tapping and aiming at metal points from Vienna Test System were used. We used t-Student test to testify statistical differences between means in groups of both sexes.

**Results and conclusions.** Results show the lack of sexual differences in two-hands co-ordination and tapping. There were differences between boys and girls in arm's aiming. Boys made less mistakes, but the time of single mistake was longer.

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**REVIEW PAPERS**

**Janusz M. Morawski**

Bionics, modeling and computer simulation in investigation of basic human psycho-motor activities

In the paper one reminds slightly forgotten tool of human body motion investigation which takes use of bionics, control theory and computer simulation. Basically, the body motion is understood as a control process where the body anatomic structure, referred to in terms of simplified mechanical model, is considered as controlled plant whereas the hypothetically assumed appropriate controller is localized within sensory-motor system. The coherent closed-loop body motion model is investigated by use of computer simulation. The simulation results are finally verified by comparison with the real body motion and necessary modifications of the model are introduced. The body motion may be unambiguously described in terms of a small number of the most essential model parameters. Finally one can try to localize the identified control functions within the sensory (afferent) and motor (efferent) paths. The so described procedure appeared to be very effective in exploring the most essential features of body motion in sport and rehabilitation applications. Two examples of an application of the procedure are presented.

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## **Wacław Petryński**

Three abilities on the letter of the alphabet „i”: instinct, intelligence and intuition

At the beginning, the author compares the notions: instinct, intelligence and intuition. Such an approach leads him to conclusion that it is almost impossible to create a fully universal definition, applicable to any science field. The search for such definition useful on the grounds of kinesiology needs to be preceded by constructing the model of information processing with the help of intelligence, instinct and intuition. It follows that intuition is the most promising research tool for kinesiology.

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## **DISCUSSIONS**

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### **Włodzimierz Starosta, Tomasz Jonak**

„Javelin feeling” – its structure, significance, conditions and development in the opinion of the advanced athletes

**Introduction.** In the entire preparation of the javelin thrower to the competitions the “javelin feeling” occupies a special place. It is an integral component of the content of the sport technique, that is of its “internal image of movement”. The notion has not been defined so far, but it functions in the training process and it plays a crucial role in the achievement of record results. Therefore, the purpose of our investigation was to: 1. Attempt to define the “javelin feeling”. 2. Establish the initial structure of the feeling. 3. Define some of the conditions of its development.

**Material and methods.** The research was conducted on 23 individuals (including 12 women) specializing in javelin throws, from different sport clubs in Poland. In the investigation the following was applied: a questionnaire, a set of special fitness tests, a pedagogical experiment.

**Conclusions.** 1. According to those questioned, “javelin feeling” means being so strongly bound to it, so well familiar with its behaviour that its presence during the performance of the throw is almost imperceptible. 2. The level of this feeling depends on the: advancement of the training, competition experience and practice, technical level, atmospheric conditions, wellbeing of the athlete, number of exercises developing the feeling, training period, level of movement co-ordination. 3. The methods and means applied in the experiment engendered a significant rise in the sport results among all those investigated.

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## **REVIEWS**

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### **Edward Mleczko**

New academic manual by Joachim Raczek “Antropomotoryka. An outline theory of human motoricity”

No summary.