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THE LITHUANIAN CONTEXT OF PARTICIPATION OF THE DISABLED IN HIGHER EDUCATION

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Background. The policy concerning the integration of the disabled in higher education is very important precondition of participation and the needs and rights of disabled students as higher education learners have been officially recognized in many countries by their legislation. But achieving positive miscellaneous support in order to overcome the barriers for participation of disabled students in higher education requires far more than legislative change. The access and participation have multi-layered context encompassing physical, attitudinal and curricular issues related to physical environments, earning capacity of disabled students, entrance to higher education, institutional support, assistive technology or adapted lecturing-learning material, the training of staff to support disabled students. The present study is devoted for analyzing and identifying the mentioned above problems at the current national policy, institutional universities' and individual students' level regarding the possibilities, real provision and practice of disabled students in higher education in Lithuania.

The goals. 1) To analyze the national and delegated legislation concerning the rights, equal opportunities and financial support of disabled in higher education; 2) To present the national data regarding the general extent and distribution of disabled as well as study programs mainly chosen by disabled persons according to the type of disability in university education; 3) To evaluate the adaptation of physical environments and technological supply meeting the special needs of disabled students on national higher education level; 4) To ascertain the main barriers and positive factors for successful higher education of disabled from the findings in single specified university study program.

The methods and organization: 1) The content analysis of Lithuanian legal acts; 2) The inquiry of Lithuanian universities; 3) The inquiry of disabled students participating in Adapted physical activity (APA) study program. Nine of all 15 Lithuanian universities responded to the inquiry. All twenty APA students responded to the inquiry.

Results: Lithuanian policy declaratively assure the equal opportunities and equal conditions for disabled in higher education, but up to now and in future up to 2010 there is not foreseen any measure for implementation of the policy. On an average the disabled students comprise 0.24% off the total number of students (84279) in the universities investigated. The mostly of all (204) disabled students in universities investigated have had permanent internal disorders (42.7%), physical (25.5%) and combinative (23%) disabilities as to compare with those having hearing (4.9%) and visual (3.9%) ones. Generally, the students with physical disabilities chose the study programs in the fields of APA, pedagogy, psychology, law, management, languages, mechanics, engineering, mathematics. Those with hearing disabilities selected the study programs of APA, religion sciences, arts and architecture. The visually disabled students preferred the ones in law and history. The majority of universities investigated have unequipped physical environments, limitation in technological means. The disabled APA students indicated that main positive factors for entering and successful studies in higher education should have to be the well-rounded information about the study program and positive attitudes of staff, disabled student teacher and student-peer relationships.

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BREATHING EFFECTS ON FRONT CRAWL STROKE KINEMATICS IN SWIMMING

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The aim of the present study was to determine the effects of breathing and breath-holding on the 3D underwater stroke kinematics of front crawl swimming. In front crawl swimming, head movements should be coordinated with body roll to reduce the tendency for swimmers to lift their head out of the water for a breath (Maglischo, 1993). Costill et al. (1992) introduced that swimmers recover their arm higher and more linearly on the breathing side and use somewhat lower and more lateral swing over the water on the non-breathing side. Payton et al. (1999) reported that (6 male competitive) front crawl swimmers performed the front crawl breathing action without greatly altering the timing of the four underwater phases of the stroke.

Ten female competitive freestyle swimmers participated in the study. Each subject swam 6 front crawl trials of 25 m at a constant speed under breathing and breath-holding conditions. The underwater motion of each subject's right arm was filmed using two S-VHS cameras, operating at 60 fields/s, which were positioned in front of two underwater viewing windows. The spatial coordinates of selected points were calculated using the DLT procedure with 30 control points (RMS values: 4.4, 4.6 and 7.2 mm in the X, Y and Z directions, respectively) and after the digital filtering of the raw data with a cut-off frequency of 6 Hz, the hand's linear displacements and velocities were calculated.

The analysis of the data revealed that when swimmers performed the breathing trials, the time to complete the arm stroke, the backward hand displacement relative to the water and the lateral displacement of the hand in the X — axis during the downsweep were significantly increased, while peak backward hand speed during the insweep and the displacement of the hand during the push phase were greatly reduced. Moreover, the total displacement of the hip during the stroke was significantly increased by an average of 6%.

	Breathing	Breath-holding	t - value
Total underwater pull (s)	1.25 ± 0.17	1.16 ± 0.15	2.764 *
Absolute pull length (cm)	54.4 ± 4.99	48,1 ± 7.87	2.471 *
Downsweep (cm)	9.17 ± 4.73	6.19 ± 5.56	2.638 *
Max vel the insweep (m.s ⁻¹)	1.84 ± 0.11	2.09 ± 0.40	-2.368 *
Push (cm)	5.80 ± 4.16	11.8 ± 6.58	-2.297 *
Total displac. of the hip (cm)	159.4 ± 18.2	150.1 ± 23.9	2.619 *

* p<.05

The results of the present study revealed that breathing action and body roll affects the movement pattern and influences stroke mechanics. When female swimmers performed the breathing action they increased significantly their timing of the total underwater pull without any change during the insweep and push phase. These results should be taken into account by coaches in order to better understand the technical effects of moving arm position and breathing action and co-ordination.

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ANALYSIS OF WORLD ELITE CANOEISTS COMPETITION ACTIVITY OF 2005

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Sports practice and theory emphasizes the problem of training session management, although it does not receive adequate attention yet. The analysis of competition activity which helps to seek for high sports results should be a matter-of-course task and should serve as a basis designing viable programs of the preparation of sportsmen. Comparing individual or team indicators of canoeists with the model ones lets us establish the direction for further improvement and thus brings in certain adjustments in the plans of training sessions.

The issues of tactics and strength distribution have been analyzed in modern sports theory and practice (Barisas et al., 1994; Issurin, 1998; Raslanas et al., 2004), and they are critical in seeking high results. Nowadays, when there are tight-knit results of winners and prize-winners, winning is possible only when the right tactics is chosen and when strength is equally distributed throughout the distance. So it is *relevant* to investigate the tactics of most powerful world canoeists and the peculiarities of changes in speed while covering the distance.

Research aim is to analyze the competition activity of world canoeists of 2005.

Research methods: analysis of literature, analysis of competition records, mathematical statistics.

Organization of research. The technical records of the youth and adult European championships, as well as the youth under 23 years of age European championships, were analyzed, where the time of covering 1000 m and 500 m in separate ranges (every 500 and 250 m) was recorded. The average speed of medal winners, men (n = 60) and women (n = 30), were analyzed, as well as the changes in speed in different distance ranges compared to the average speed of the whole distance. The changes of speed and the variants of tactics of crews winning different places and using different canoes (single and two-men) were compared.

Research results. It was established that the most often applied variant of tactics among women canoeists was 1—2—3—4, which was used by 58.6 per cent of the crews, and variant 1—2—4—3 (17.2 per cent). We can claim that women cover the distance with gradually decreasing speed.

Men canoeists medal winners most often applied tactical variant 1—2—3—4 (48.4 per cent of the crews) and 1—3—4—2 (16.1 per cent). 20.0 per cent of men-medal winners applied 1—2—3—4 tactical variant, 23.3 per cent used 1—3—2—4, and 20.0 percent applied 1—3—4—2 tactical variant.

The sportsmen who took the first place covered the distance more gradually compared to those sportsmen and crews who took the second and the third places. Among men medal winners some of them covered the second range of the distance faster than the first in the 500 m distance, and most often they were from the group of juniors and youth. All women canoeists, individual and crews, faster covered the first range of the distance than the second one in the distance of 500 meters.

AEROBIC CAPACITY OF AEROBICS GYMNASTS WITH DIFFERENT ABILITIES

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Introduction

Aerobic gymnastics (the name of discipline was changed in 2005) is the ability to perform continuous complex and high intensity movement patterns to music. Originated from the traditional aerobic classes, aerobic gymnastics routine must continuously integrate the performance of physical qualities like coordination, flexibility and strength with the perfectly executed traditional aerobics movements (*Federation Internationale de Gymnastique*, 2004). The aim of this study was to characterize aerobic capacity of aerobic gymnastics athletes with different level of training during continuous increasing exercise.

Methods

Lithuanian women aerobic gymnasts participated in this study. According to performance (training) level they were divided in two groups: well trained (WT) and moderately trained (MT). All the subjects underwent maximum physical exercise (increasing run) with continuous intensity on the treadmill (Tunturi[®], Finland). Pulmonary gas exchange parameters were continuously measured using the telemetric equipment ("Oxycon Mobile"), heart rate was registered with *Polar Accurex-plus*.

Discussion

In determining the aerobic capacity of aerobics athletes of different mastership, we have observed that the period of training of moderately trained (MT) aerobics athletes was several times shorter than that of the subjects of the well trained (WT) group though there were hardly any changes in the mean indices of their VO_{2max} . It is probably that the insignificant VO_{2max} values of aerobic athletes of the WT group have been influenced by the fact that before taking up aerobic gymnastics the latter have been practicing artistic gymnastics for a number of years. According to Kirkendall D. T. (1985), the aerobic capacity of athletes engaged in artistic gymnasts was a low one compared to that demonstrated by representatives of other kinds of sports, though Montgomery & Baudin (1982) have found the VO_{2max} of the representatives of artistic gymnastics who had achieved a high level of mastership to be from 49.3 to 50.3 ml/kg/min. The VO_{2max} values of our subjects were lower by 22.5% compared to the data of Spanish scientists who had studied representatives of aerobic gymnastics with three world champions among them (Rodriguez et al., 1998). The latter difference may have been determined by the mastership level of the athletes studied as well as by genetic factors and the volume of training loads.

Summary

The aim of this study was to characterize aerobic capacity of aerobic gymnastics athletes with different level of training during continuous increasing exercise. The subjects were 15 aerobics gymnastics athletes. All subjects performed maximum physical exercise (increasing run) on the treadmill. The HR values were continuously recorded by Polar HR monitor Accurex Plus, to establish respiratory gas exchange telemetric equipment "Oxycon Mobile" (Jaeger, Germany) was used. The results showed that maximum and submaximum respiratory gas exchange and HR values during the continuous incremental treadmill test were similar in groups of aerobic gymnastics with different level of training.

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THE ROLE OF SPIRITUALITY IN THE TRAINING OF JUDO SPORTSMEN

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Problem of investigation. When investigating the problems of spirituality and education the representatives of various scientific fields give preference to art which they find to be the strongest spiritual value. It is widely recognized that the education of ethical values should be closely related with the teaching process in educational institutions. However, the education of spirituality through sport activity seems to be ignored. May the art of fighting affect the moral evolution of the personality? To be more precise, what role do judo sportsmen and trainers play in the person's education of spirituality and morality?

The aim of research: to find out what role judo sportsmen and trainers play in the education of spirituality and morality during training hours.

Methods of research: exploration of scientific sources, questionnaires, mathematical statistics (an expression of results in percentage).

As the questionnaires the anonymous closed type worked out at Vilnius Gediminas Technical University in 2003 was used; 80 respondents participated in the project among whom there were 40 judo trainers and 40 sportsmen and sportswomen (from 16 to 21 years old) of higher or high skills.

Analysis of research results:

The results showed that the absolute majority — 95% of trainers and 83% of sportsmen — were convinced that spirituality makes an inseparable part of judo sport. However, 55% of trainers and 71% of sportsmen claimed that during training hours the education of spirituality and morality does not meet-sufficient attention. 60% of trainers and 94% of sportsmen believe that victory is achieved with the help of physical rather than spiritual preparation.

Trainers (58%) think that the most important factor before and during the competition is the sportsman's desire to win; as the second factor they consider the sportsman's spiritual state and concentration (45%).

The majority of the respondents regard the evaluation of the rival and his\her state and discipline as an unimportant factor in the strife for victory.

Among the most important traits of the judo masters the trainers mentioned patience, honesty, justice, attention and tolerance. Among the least important ones they found lenience and compliance.

The sportsmen think that the judo masters should be attentive (70%), patient, honest, just and tolerant. They also find lenience, sympathy, compassion and compliance to be of little importance. As they claim, the most important moral traits are diligence, persistence, dutifulness and friendliness. As a rule, they exclude complaisance.

The trainers are convinced that for them the most important traits are diligence (80%), persistence, dutifulness, courage and responsibility. The least important ones for them are modesty, complaisance, moderation and sensitivity. They think that the most typical moral traits of the trainers are tolerance, devotion, patience, love and compassion. The sportsmen, in their turn, argue that their most typical moral traits are love, devotion and goodness.

All the respondents agree that compliance and altruism are not typical to either of them.

68% of questioned sportsmen would like to learn more about judo philosophy. Only 15% think that they know it sufficiently. Meanwhile, 18% are chiefly interested in the sport aspects of judo. The great majority of sportsmen consider the trainer to be the main source of such information. 37% of sportsmen try to find such information independently. 15% claim that it is nearly impossible to find such information. 52% of trainers argue that they begin the teaching with concentration, the explanation of the importance of ethics and respect for the rival, others start with the history of judo and the falling and throwing technique.

52% sportsmen maintain that learning has no actual impact on the sport results. 26% think that the students who have better results in their studies achieve better results in sports. However, 24% of sportsmen claim that, on the contrary, the students who are not as good at their studies achieve better results in sports.

The absolute majority of the sportsmen (90%) regarded the bow ritual before the rival, partner, trainer or a judo beginner to be a sign of respect and not merely a necessary requirement or a remnant of the Japanese tradition.

Conclusions:

1. The majority of respondents consider the education of spirituality and morality to be an important and necessary factor in the training of judo sportsmen. However, they think that it is given too little consideration in Lithuania.

2. According to the answers of the respondents, the most important traits of the judo masters should be patience, honesty and justice.

3. Compliance and altruism are rather insignificant for the judo masters.

4. A greater part of sportsmen are eager to learn more about judo philosophy. 37% are interested in it and get acquainted with it independently. 18% stress the difficulty of finding such information.

5. 90% of sportsmen in the bowing ceremony find an expression of respect.

SPORTS OF PEOPLE WITH DISABILITIES: PROBLEMS AND THEIR SOLUTIONS IN LITHUANIA

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The disabled sports as well as sports in general is divided into the organisation and the elite one, where people despite of their disability have all possibilities to take part in the contests on the national and international level.

The aim of our work is to establish whether the disabled sportsmen, as well as healthy sportsmen have equal opportunities to go in for sports and are fully integrated into the disabled sports system.

Participants and the research procedure. Anonymous survey was carried out, therefore a special and approved questionnaire was prepared. Some 126 respondents took part in the survey: 76 healthy and 50 disabled sportsmen, who take part in the national and international contests. The data was approved by statistical and mathematical methods — SPSS 11 for Windows package.

Results. Despite the health condition, the absolute majority of the polled sportsmen (92.9%) think that their life is meaningful and are happy about their life. Even 86.5% think that sports helps them to realise themselves and some 50% of the polled irrespective of the type of disability claim that “belief in sports give meaning to their life”. However we noticed that such indicators as the feeling of happiness, self esteem and self awareness was quite lower of the people with disability ($p < 0.05$) than that of healthy sportsmen. When assessing the support of sports institutions to the disabled sportsmen, it was established that only 3.2% of them are financially supported. Even 50% of the disabled sportsmen have no permanent coach and just 15.6% are provided with services by a qualified coach. According to 57% of the polled the majority of sports facilities are not suitable for the disabled. More than half (52%) of the disabled respondents mentioned that they pay for training facilities themselves. The expenses of sports facilities, transport were covered for just 48% of the disabled who took part in the survey. It is quite a problem for the disabled to get the required inventory: just 10.3% of the polled stated that they are well provided with the inventory and 12.7% that they are fully provided with sportswear.

Conclusion. On the basis of the carried out research one could draw a conclusion that the disabled sports in Lithuania is considered to be of low social prestige, it is poorly funded, it lacks qualified coaches, the services of provided by sports medical staff and psychologists.

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PHYSICAL EDUCATION AND HEALTH OF CHILDREN FROM CHILDREN'S FOSTER HOME

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In Lithuania about 6000 inmates live in children's care home, but their health and lifestyle is problematic. There is no data about relationship between their physical training and health.

The aim of the investigation was to study the physical training and health of children's care home inmates.

Both boys and girls residing in the cities, towns and rural children's care home districts were surveyed. Data were collected randomly using anonymous questionnaire from 20 children's care home. In total, the number of respondents was 1010: 518 boys and 492 girls. The data was processed with statistical EPI INFO 2002 software.

It was established that 22.6% of respondents evaluate themselves as "very healthy", 47.1% — as "healthy" and 30.3% — as "not very healthy".

Boys and girls evaluate their health in the same manner ($p > 0.05$).

Most of the children have complained headache and dizziness, weakness, nervousness, sleeplessness and stomachache. The children have taken medical advice and medicine due to these complaints.

Physical education lessons were popular for 90% of children. 28.5% of boys and 15.7% of girls ($p > 0.05$) did exercise everyday in their free time, 43.1% of boys and 51.8% of girls did exercise 1—3 times a week ($p > 0.05$).

18.5% of boys and 15.7% of girls ($p > 0.05$) take sport in various athletic clubs, mostly middle school age boys (28,5%) and older school age girls (23.6%).

Number of girls who take exercise increased with age.

It was established that children were injured during sport (accordingly 10.3% of boys and 2.0% of girls).

The health programme promoting physical training was prepared for children. This programme was oriented to children who evaluate themselves as "not very healthy". During second investigation after 10 months it was established that number of complaints decreased by 11%, number of taking medical advice by 16% and taking medications by 23%.

It was established that between physical training and health is strong link. Taking exercise helps to promote health, harden the organism and helps to decrease morbidity risk.

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PRIMARY SCHOOL CHILDREN'S PHYSICAL ACTIVITY IN LEISURE

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The aim of this study was to determine the place of physical activity among leisure activities of primary school children.

The subjects of this investigation were 80 pupils: 40 boys and 40 girls. The parents of the pupils filled in the questionnaire of 33 questions about their children's leisure activities and to which activity they give priority.

43.7 of boys and 47.8 of girls spent their leisure outside for 1—1.5 hour a day and only 13.0 girls and no boys were outside more than 2 hours a day. 70.3 boys and 52.0 girls played active games outside,

Most of children watched TV (75.1 boys and 78.0 girls), listened to music(60.7 boys and 52.0 girls)and played computers games(50.7 boys and 25.0 girls)

Primary school children spend more time outside in summer time: riding the bicycle, roller skating. The ball and bicycle are the most popular sport equipment that pupils have at home.

Parents give priority to mental (67.5) and moral (22.5) education. Only 5.0 parents give priority to physical education. 54.3 primary school children attend active leisure classes at school (various sports and dance) and 42.4 — other leisure classes (drawing, singing, theatre).

The research shows that leisure physical activity is poor among primary school children. They mostly spend their time in setendary activities after lessons.

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5—7 YEAR OLD CHILDREN'S BALANCE CHANGES STIMULATING THEIR PHYSICAL MATURING FOR SCHOOL

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Well developed physical qualities create favourable conditions for children to learn more new movements and to use them in various activities.

Research aim — to examine 5—7 year old children's changes of static and dynamic balance and development peculiarities stimulating their physical maturing for school.

The following **research methods** were applied: educational experiment, testing, statistical analysis. To test children's balance Bruininks-Oseretsky tests of motor proficiency were chosen: three items static balance (standing on preferred leg on floor (walking line), standing on preferred leg on balance beam, standing on preferred leg on balance beam, eyes closed) and five items dynamic balance (walking forward on walking line, walking forward on balance beam, walking forward heel-to-toe on walking line, walking forward heel-to-toe on balance beam, stepping over response speed stick on balance beam).

Research organization. The educational experiment lasted for two years. 120 children participated in the experiment. The experimental group consisted of 62, the control group — 58 children from Klaipėda kindergartens. The children from the experimental group were educated according our created program for 5—7 year old children's maturing for school, one motor education part of which was teaching balance. The control group used the program "Verinelis", certified by Lithuanian Republic Ministry of Education. Three control researches of balance abilities were conducted.

Discussion of the results. Our research show that balance abilities depend on children's age. Five year old children did not manage to keep balance even for a second standing on preferred leg on balance beam, eyes closed, often did not manage to perform dynamic balance tasks in reduced support area for longer period of time, to regain balance after beginning to lose it, could not comprehend special and movement parameters, did not manage to maintain attention. It corresponds with the results of B. J. Craty and M. Martin research. Balance abilities, vestibular apparatus, sensory and motor integration improve rapidly during sixth and seventh years of life. Children of this age perform dynamic and static balance tasks more easily. Girls' balance is better than boys'. This fact of our research corresponds with S. D. Frederick (1977) and G. S. Morris's research data. After results analyses significant individual differences were found. Summarizing the results of the pedagogical experiment it can be stated that qualitative and quantitative children's balance indexes improve if balance developing tasks and games are performed expediently and purposefully. 5—7 year old children's balance abilities transform in the educational process reaching a higher level, which is expressed by more rational, precise and quicker actions, as well as by the quality of tasks performance. Having performed statistical analyses and compared the results of control and experimental groups it can be stated that our created educational programme for balance abilities applied in the experimental group was more effective than in the control group.

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PUPILS' OF SENIOR FORMS BUSINESS AND RECREATION IN THEIR LEISURE TIME

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Recreational needs orient individual's behaviour which is related with physical development, rest, entertainment, sport or tourism; also, it predetermines the understanding of beauty of an individual's body, harmony between physical and spiritual parameters (Barkauskaitė, 1998; Vitkienė, 2002). Individual's interaction with physical education, wellness, rest and traditions, according to M. Blaxter (1993), evoke understanding of culture, values. Theoretical analysis of these factors allows us to deeper acknowledge the model of expression of recreation as well as its influence on individual's quality of life, self-expression. That is why the research was oriented towards the factors which influence the expression of recreation in youth's leisure time.

Aim of the research was to theoretically reason the consistency of the conception of busyness and recreation in educational environment, and to investigate the expression of leisure activities of pupils of 10—12 forms empirically.

Methods and organisation of the research.

The research was carried out at comprehensive schools of Šiauliai town in 2005, pupils of 10—12 forms ($n = 653$) took part in it. In order to implement the aim of the research, we have applied a descriptive analysis and a survey.

Consideration of the results

The analysis of the research results allows us to state that boys are more often (once per day, several times per week) engaged in sport activities, while girls are more passive. The relation between pupils' gender and choice of sport activities was set ($p < 0.004$). Twice more boys take exercises everyday in comparing with girls.

The specificity of gender was noticed in choice of forms of sport activities as well: 41.2% of boys who took part in the research said that they were exercising various sport games (basketball, football and etc.) as well as fishing (15.4%) several times per week. The boys only once per month in winter exercise the following kinds of physical activities: skiing (45.8%), skating (27.9%), and only several times per year they take part in tourist hikes (62.9%).

Like the boys, more than half of girls (56.9%) said that they went to school on foot, and only one tenth of them took exercises every morning. 18.9% of the girls who participated in the research jog several times per week, 21.6% of them ride a bike several times per week. A little bit more rarely — only once per week — girls play sport games; they ski and skate averagely only once per month (38.2%) or even once per winter season (56.5%). As the girls investigated have stated, 45.7% of them did not take exercises at all, also, majority of them did not fish (68.5%) and did not participate in tourist hikes at all (21.1%).

Strengthening of health was indicated as one of the most important motives by both boys (50.0%) and girls (61.7%); 64.7% of girls also indicated the motif of wishing to look prettier; also, this motif encourages almost half of boys (48%) to go in for sports. 43.3% of boys and 50.4% of girls go in for sports wishing to spend their leisure time well. Boys more often (30.9%) than girls (16.2%) stated that a desire to win a competition also was an important motif encouraging going in for sports.

To sum up the results of the research we may state that there are no effective strategies directed straight towards a person, his/her everyday behaviour. To our mind, it is purposeful to find out and exalt values which would educate a physically active lifestyle, would change a point of view towards recreation and possibilities for its implementation.

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THE INFLUENCE OF STRENGTH ON THE RUNNING SPEED DYNAMICS OF THE BEST LITHUANIAN SPINTERS IN THE 60 METERS RUN

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The aim of the research is to determine the influence of strength on the running speed rate of the best Lithuanian sprinters.

Research methods and organization. 1. To determine running time duration in 60 m run (recording the time after every 10 m); 2. To determine leg muscle strength; 3. To calculate mathematical statistics (arithmetic average, standard deviation, the significance of variability differences in average according to the Student criteria).

The subjects of the study are 11 Lithuanian short distance runners (height = 179.82 ± 5.53 m, weight = 76.91 ± 4.35 kg, maximum power = 150.91 ± 32.39 kg), classified according to the relative muscle strength into two groups (the first group: $n = 6 - 2.25 \pm 0.20$ per 1 kg body mass; the second group: $n = 5 - 1.70 \pm 0.16$ per 1 kg body mass).

Discussion of the research findings. The research results show that athletes from the first group (larger maximum power 174.17 ± 21.08 kg and relative power 2.25 ± 0.20 per 1 kg body mass) run faster the first 30 m than athletes from the second group (maximum power 123.00 ± 16.81 kg and relative power 1.70 ± 0.16 per 1 kg body mass) ($p < 0.05$), but lose to the athletes from the second group in the segment 50–60 m ($p < 0.05$) (Figure 1).

The sprinters from the second group, showing lower strength results, are able to reach a higher increase in speed than those from the first group (the first group: 2.84 m/sec, the second group: 3.26 m/sec). The data obtained from the research confirms the statements of the authors that the ability to run fast after the start signal does not have any correlation link with the maximum speed results. Strength is conversely proportional to speed; therefore, theoretically the higher the running speed is the less strength can be used during a short take-off period. Training means aimed to perfect the start acceleration are specific and by their contents as well as biomechanical and physiological characteristics can substantially differ from those training means which are intended to develop the maximum running speed (Radžiukynas, 1997; Stanislovaitis et al., 2003).

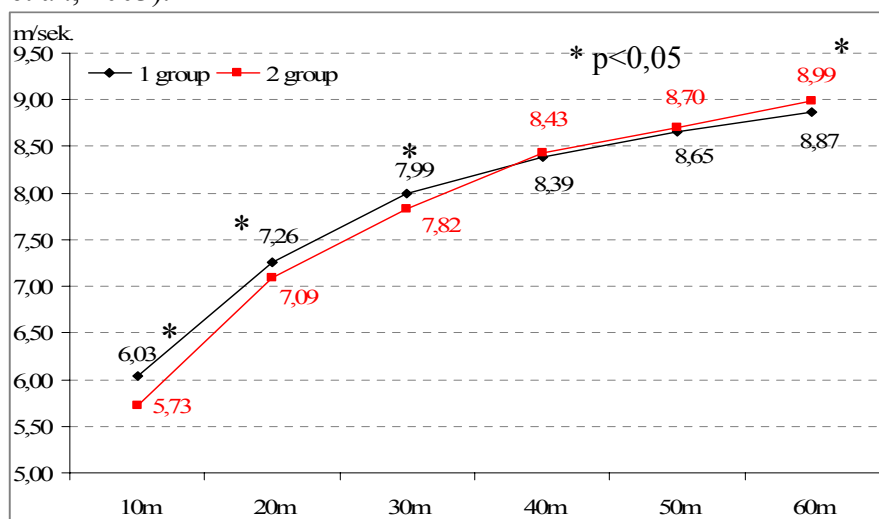


Figure 1. The running speed dynamics of different groups in 60 m

Conclusion. In conclusion, it can be stated that the application of strength exercises in training sprinters has to be highly individual and specific.

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THE VARIABILITY IN CHAOTIC SYSTEMS DURING ISOKINETIC KNEE FLEXION AND EXTENSION AT 450 °/s RANGE MOTION TESTING

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The aim of the study — to determine the variability of chaotic systems during isokinetic knee flexion and extension at 450 °/s range motion testing.

Methods of the study. The participants of the study were 10 healthy male, age: 19—23 years; height — 177.8 ± 5.8 ; weight — 78.2 ± 6.1 . The study was performed in the human motoric laboratory of Lithuanian Academy of Physical Education in year 2005/2006. All the subjects have done non-stop 50 repetitions of knee flexion and extension at 450 °/s range motion on “Biodex System Pro 3” device.

Mathematical statistics. To determinate variability of chaos system we have used “chaos data analyzer” software version 2.1 (1998). There were estimated following parametres: Lyapunov exponent, correlation dimension, Kolmogorov-sinai entropy, standard deviation. We have selected the two subjects whom the data have shown the highest and lowest values of chaos.

Results and discussion

The algorithms which are balanced for chaos or nonlinear systems determination show the processes quality of dynamic systems. From the study we have determinate that the subject “A” had lesser variables which indicate chaos than subject “B”. The value of Lyapunov exponent are following: subject “A” — 0.165, subject “B” — 0.225; Kolmogorov-sinai entropy: 0.637 and 0.771; Correlation dimension: 3.409 and 3.582; standard deviation: 49.44 and 53.28. Attractor which is presented (Fig. 1) shows more stabile curve of dynamic motion at subject “A” than at subject “B” curve. We suppose that the variation of torque reflects the stability level of central nervous system, muscles coordination and etc.

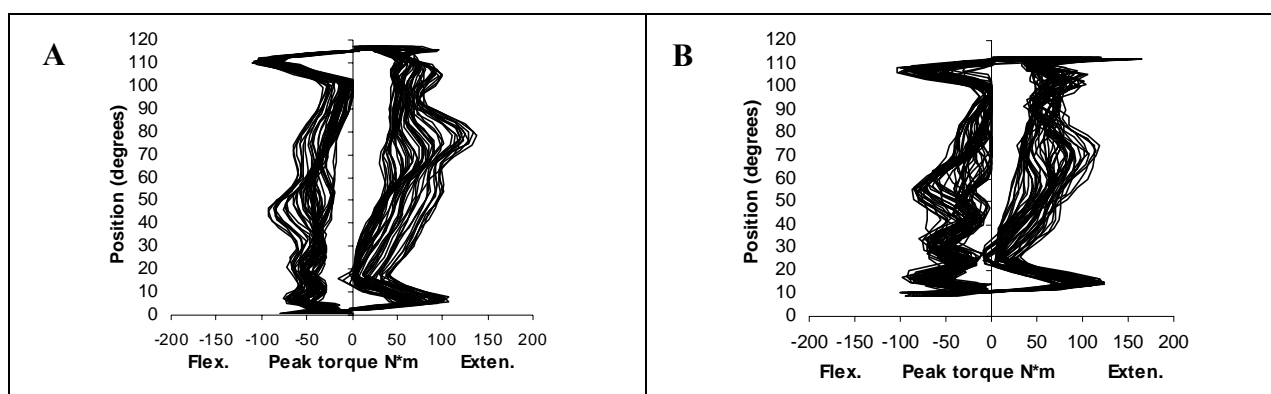


Fig. 1. Attractor view of knee flexion and extension motion at speed 450 °/s of subject “A” (lowest chaos variables) and subject “B” (highest chaos variables) witch illustrating the position and peak torque interaction

The main conclusion. We have proved the fact that always in the control group there are differences in stability of variation of dynamic system. The results from the study have showed that the subject “A” during 50 nonstop repetitions had more stabile dynamic of knee flexion and extension motion, than subject “B”.

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YOUNG PEOPLE'S LIFESTYLES AND SEDENTARINESS — A EUROPEAN PERSPECTIVE

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Abstract

Studies into pre-school and school children in European countries reveal an alarming increase in the proportion of overweight children: varying from country to country ten to twenty-five per cent are already overweight by the time they start school. This trend is most disquieting. The children in question are in great danger of suffering from obesity and its consequences for the rest of their lives. This can lead to physical deficits as well as psychosocial problems and restrictions in their performance capacity as a whole.

The rise in the prevalence of overweight people is largely caused by social developments of the past decades. These have led to changes in lifestyle, above all to an increase of sedentary behaviour with major implications for the energy balance.

The greater part of the lecture will deal with these changes in lifestyles and its causes focusing on nutrition, media consumption and physical activity in young people in European countries. In addition emphasis is put on the question how to help children, adolescents and families to develop an active and healthy lifestyle and so prevent them from becoming overweight. Reference is made to a macrosocial approach, covering many aspects of life of children and young people and focusing on prevention.

ATHLETES ATTITUDE TOWARDS COMMUNICATION BETWEEN TRAINER AND ATHLETES (IN VIEW OF BASKETBALL PLAYERS AND WRESTLERS AGED 15 TO 18)

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Generally, research studies are focused on peculiarities of communication between athlete and trainer and within male or female sport teams without comparing the similarities and differences of athlete in the two gender groups (Eys et al., 2003; Malinauskas, 2005). The article focuses on revealing specific features of communication of trainer with basketball players and wrestlers aged 15 to 18 (evaluation by athletes). By seeking to achieve the set goal, the following tasks were solved: to investigate how basketball players and wrestlers estimate their trainer's professional and non-professional communication and behaviour (gnostic, emotional and behavioural components), and to establish the efficiency of trainer's communication during training. It is presumed that athletes of team sports (basketball players) more favourably estimate the trainer's communication with them than the athletes of individual sport branches (wrestlers).

During the research the following methods were applied: questionnaire-based analysis (questionnaire *Athlete and Trainer* and *Efficiency of Communication during Training*), and mathematical statistics (χ^2 test). The method *Athlete and Trainer* (Meidus, 2004) defines positive and negative athlete's attitude to communication with trainer. The following three components of communication between athletes and trainer were evaluated: gnostic (informative), emotional and interactive (behavioural). The T. Dembo and S. Rubinstein method (Елисеев, 1994) *Estimation on the Efficiency of Communication during Training* is constructed to evaluate four rates: trainer's attentiveness, trainer's criticism, trainer's praise, and trainer's support.

The research was carried out in 2004 with 86 basketball players and wrestlers aged 15 to 18.

When applying the J. Hanin method *Athlete and Trainer*, it was established that basketball players estimate favourably their trainer's behaviour and communication, and wrestlers — only averagely. When applying the χ^2 test, it was disclosed that basketball players statistically significantly had more favourable estimation of their interaction with trainer and the level of trainer's emotional components ($p < 0.05$). When employing the T. Dembo and S. Rubinstein method *Estimation on the Efficiency of Communication during Training*, it was revealed that basketball players evaluated trainer's criticism as milder, and had statistically significantly ($p < 0.05$) more favourable estimation of trainer's support during training.

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RBE APPLYING VELOERGOMETRIC LOAD

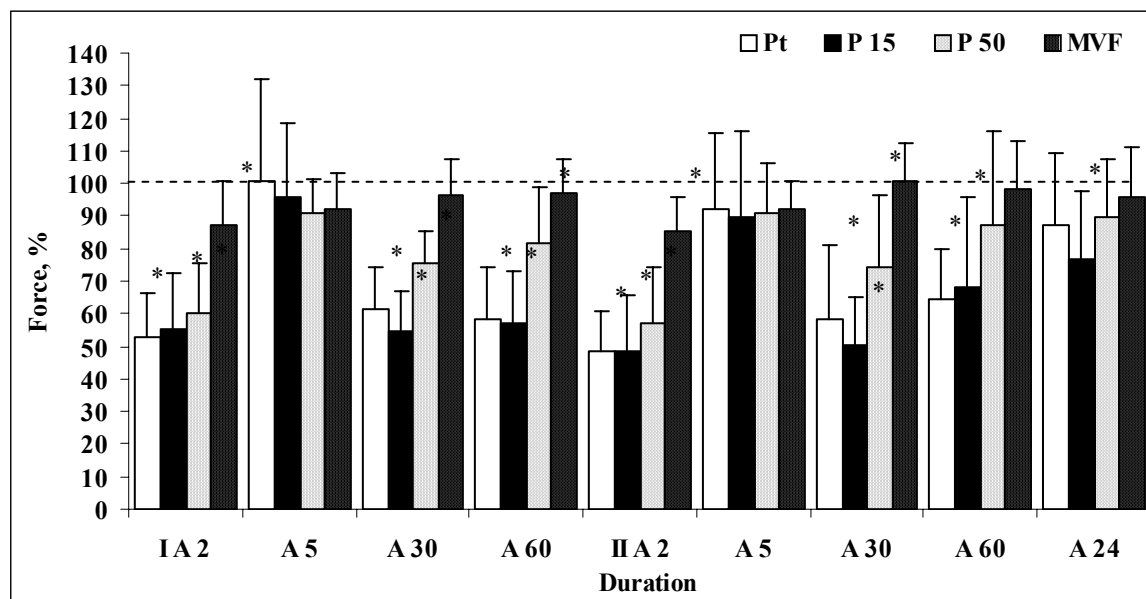
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Introduction. It has been found that morphologic cell changes are caused by a sudden muscle stretching and this damage is extremely strong doing eccentric and eccentric-concentric exercises (Sayers Clarkson, 2001; Nosaka et al., 2002 b). Increase of metabolite concentration in blood may influence the damage indirectly. During metabolic fatigue calcium suction (pump) capacity decreases and Ca^{2+} does not manage to return to the sarcoplasmic net (Fitts,1994). When Ca^{2+} increases in the myoplasma ferments are activated. They induce the protein degradation on which electromechanic links depend (Chin et al. 1997; Smith et al., 1999) In this case the links between T-system and sarcoplasmic net may be disturbed for a longer time than the extinction of metabolites; at the same time during the recovery LFF increases.

Aim of the research is to establish the influence of two-day long loads on velorgometer on muscle fatigue and its recovery.

Methods. The subjects of the research were healthy males who did not actively participate in sports activities (n=10). Before the research muscle force caused by electrostimulation at 1.15 and 50 Hz frequency when the knee was bent at 90 and 135 angle, MVF, muscle soreness and La concentration in blood was assessed. The applied load was 2 series on velorgometer for 30 s every 1 min. Similar testing was done 48 hours after the load.

Results



Note. Percentage changes in the indices of Pt, P 15, P 50 and MVF (compared to initial values) 2 (A 2), 5 (A 5), 30 (A 30) and 60 (A 60) min after load I and 2 (A 2), 5 (A 5), 30 (A 30), 60 (A 60) min and 24 (A 24) h after load II. * — p < 0.05, compared to the initial value.

Fig. 1. Changes in muscle force evoked by electrostimulation of *m. quadriceps femoris* at 1 Hz (Pt), 15 Hz (P 15) and 50 Hz (P 50) frequencies and changes in MVF before and after loads I and II. Muscle force was recorded at the angle of 135° in the knee joint ($\bar{x} \pm S$)

Maximum voluntary force and *quadriceps femoris* muscle force caused by electrostimulation decreased after 30 s duration of two series load at maximum intensity on velorgometer. LFF increased step by step, 30 min after the load. MVF recovered 5 min after the load. Force caused by electrostimulation recovery lasted longer than 1 hour and it depended on the muscle length. Repeating the same load after 60 min (the muscle was fatigued) involuntary muscle contraction force decreased as much as after the first load. Research results showed that

after concentric exercises RBE manifested itself. Because of concentric loads at maximum intensity metabolic fatigue appears: muscle contraction force decreases because of energetic substances(ATP, KP and glycogen decrease) as well as metabolite (inorganic phosphate, hydrogen ions, etc) concentration increases (Child et al., 1998; MacIntyre et al., 2001; Martin et al., 2004).

Conclusions. Repeated bout effect reveals itself 48 hours after the load on velorgometer. Applying the repeated load on velorgometer after 48 hours expression of indirect muscle mechanic damage indicators decreases; muscle soreness decreases and muscle contraction function recovery increases. This shows that effect of repeated load reveals itself not necessarily only after eccentric — concentric loads: it also manifests itself after concentric loads.

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THE RESULTS' ANALYSIS OF WORLD ELITE SHOOTERS IN THE WORLD AND OLYMPIC GAMES

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Introduction

The main competition of the season is one of the most important means of improvement of sportsman's preparation and mastery. The indicators of competition activities are the most significant data characterizing sportsmen's preparedness (Raslanas, Skernevičius, 1998). Another aim of seasonal competition is to solve various tasks of techniques and tactics, and to accumulate competition experience.

The peculiarities of shifts in shooting results of elite shooters have been little researched (Viitasalo et al., 2001). The present study deals with the changes in results in separate events by the best shooters evaluating the world championships and the Olympic Games.

Research aim was to analyze the results of elite shooters in world championships and the Olympic Games.

Research methods: analysis of literature, analysis of competition records, mathematical statistics.

Organization of research. The researchers analyzed the results of men and women's pistol shooting at the world championships and the Olympic Games of 1996—2004. The shifts in results were established in the following events: women pistol shooting from the distance of 10 and 25 meters, men pistol shooting from 10 and 50 meters, and men rapid fire from the distance of 25 meters. The shooting results in qualifying and final competitions of shooters who took different places were compared.

Research results. It was established that the conciseness of women pistol shooting results from the distance of 10 and 25 meters at the world championships was greater than in the Olympic Games. In 1996 and 2004 the difference in sports results from the distance of 10 meters between the finalists and those who took the 41—50th places was 8.97—17.38 per cent, and in the world championships it was only 2.40—2.83 per cent. It was noticed that in the last years (2002—2004) the women shooters, who were medal winners in the most important competitions, did not show their best results in the qualifying competitions, and their final result was determined by the final shooting series. The best women pistol shooting results were produced in the Olympic Games of 1996 from the distance of 10 meters, and in 2000 from the distance of 25 meters.

The best men shooting results from the distance of 10 meters were produced in the Olympic Games of 2004, from the distance of 50 meters — in the world championship of 1988, and in 25 meters rapid fire — in the Olympic Games of 1996. Men winners of the world championships and the Olympic Games not always produced their best results in the qualifying competitions, and their final results were determined by the final series. For other sportsmen the victory was determined by the successful shooting series in the qualifying competitions, although in the final competition they were not so successful. It was established that shooters who produced their best results in both qualifying and final competitions were rather few.

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SKILL TO ACHIEVE BIG MOVEMENT AMPLITUDE AS THE CRITERIA DIFFERENTIATING PUPILS THAT BEGIN TRAINING IN TEAM SPORTS

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Introduction

The aim of this work was to investigate the level of flexibility among boys at the age of 10 representing different sports disciplines, namely team sports. The research material consisted of pupils of sports classes in Szczecin. Investigations had been conducted on the grounds of the following test: forward bend depth in a sitting posture. Additionally structural parameters had also been investigated to eliminate the effect of limbs length on the measurement value.

Material and research methods

Investigated group consisted of pupils at the age of 10 that begin training process in different sports disciplines (boys attending sports classes; n = 97). Control group consisted of 10-year old boys attending ordinary primary schools in Szczecin (n = 39).

Measurements were preceded by standard warm-up lasting for 7 minutes (Borms and Van Roy, 1996). Of course, the most desired tests are those that allow for special suppleness measurement, namely mobility of joints of the primary importance in particular sports disciplines. But it would cause difficulties in comparing and interpreting obtained results. Therefore, taking into consideration the aim of research, the author went for a depth of forward bend in a sitting position test measured with the use of a special scale (Szopa and co-authors, 1996). Additionally, anthropometric measurements were taken (lower limb length, torso length, upper limb length), necessary for further analysis of tests results, allowing to eliminate an effect of limbs length on suppleness level, according to methodology applied by Zak and Sakowicz (1996).

Tests results

All investigated subgroups (pupils of a comparative group and pupils practicing different team sports) were characterized by very high variability inside a group. The worst results were obtained by pupils in the comparative group, whereas the best ones — by pupils practicing handball. There are three subgroups that haven't reached 50 cm during the test: the control group, basketball group and volleyball group. Differences between average values obtained during suppleness measurements and its level after eliminating an effect of lower and upper limbs length on test results were analyzed with paying special attention to their statistical significance.

Statistically significant differences occurred between basketball group and handball group, between comparative group and handball and football groups.

After eliminating an effect of limbs length on results of suppleness measurement statistically significant differences occurred between comparative group and volleyball group. The largest percentage of pupils with the result of less than 50 cm in suppleness test appeared in the comparative group. The largest percentage of pupils with the result of more than 50 cm in suppleness test appeared in the football group.

Discussion and conclusions

Results obtained in „forward bend test” are not significantly different from results obtained in an all-Poland population research (Pilicz and co-authors, 1993). Differences between results in „forward bend test” and the earlier tests among children in Szczecin came out to be also relatively small (Umiastowska, 2002).

As it turned out, attempts to compare differences between the level of suppleness in particular groups were the most difficult part. While results of suppleness measurement allowing to differentiate pupils selected for sports training from the rest of the population coincide with results obtained by Szopa (1987), specialist literature doesn't offer comprehensive comparison between the suppleness level of pupils selected for particular sports disciplines.

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ERASMUS MUNDUS, THENAPA II AND JOINT ACTION: EUROPEAN COOPERATION PROJECTS TO ENHANCE FUTURE RESEARCH AND EDUCATION IN ADAPTED PHYSICAL ACTIVITY

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With the support of the European Commission the Catholic University of Leuven, Faculty of Kinesiology and Rehabilitation Sciences is coordinating three international projects. The basic philosophy of each of them is the promotion of physical activity as an excellent mean to improve social inclusion and life long well-being and to eradicate discrimination of people with disabilities in their personal and professional life.

Under the call of Erasmus Mundus Master Programmes the joint Master in Adapted Physical Activity (APA) was selected in January 2005, for a period of 5 years.

The Erasmus Mundus Master in Adapted Physical Activity is a postgraduate university programme that addresses state-of-the-art research and teaching methodology in Adapted Physical activity (APA), as well as the social, pedagogical, and technical aspects of physical activity adapted to the needs of disabled persons.

For the first year, 39 students from 25 different countries (10 European and 15 non-European) were selected.

The unique aspect of this Master course is the intercontinental character. Under action 3 of the Erasmus Mundus framework, this international aspect was even extended by establishing partnerships with 3 non-EU universities: Queensland University (Australia), the University of Stellenbosch (South Africa) and the University of Virginia (USA). These partnerships promote an extended mobility of students and scholars".

In the past 50 years, one of the most important changes within Europe has been the rapid increase in the number of people living into their 70s, 80s and beyond. Most of those people have some physical or mental disability, regardless the fact if they acquired this disability at birth, later in life or through the normal process of ageing.

To meet the new demands of this population and their specific needs in the area of exercise and sport the Thematic Network THENAPA II "Ageing and disability — a new crossing between physical activity, social inclusion and life-long well-being" was started in 2004.

The main aim of the network is to collect on European level, the information concerning physical activity and sport for older adults and to identify and develop the relevant educational programmes in the students' curricula.

The third project "Sports and Physical Activity for Persons with Disabilities — Awareness, Understanding, Action" focuses on children and youngsters with disabilities. This group is often excluded from participation in regular physical education classes and sports programmes. The aim of the project is to endorse full inclusion and participation of children and youngsters with a disability in all aspects of society through physical activity and sports, to encourage equity and to promote communities in which no one is segregated and everyone belongs.

The three projects give an outstanding opportunity to have a dynamic exchange of knowledge, experience and ideas between the universities all around Europe. That will make a substantial contribution to the establishment of an intercontinental cooperation in teaching and research in APA as well as in general improvement of the quality of live of the persons with a disability.

THE IMPLEMENTATION OF THE SPORT EDUCATION MODEL IN HONG KONG

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Sport education is one of the pedagogical models that has attracted attention and interest from physical educators and researchers recently. This model evolves from play education and aims at the promotion of positive sport experience for students (Siedentop, 1994). There have been a growing numbers of sport education research findings being published lately. Much of these research findings give similar results (Siedentop, 2002). Summary of these findings are: a) some learners prefer sport education experiences to their previous PE experiences; b) students enjoy the socializing benefits of sport education that accompany team membership and affiliation; c) students of different skill levels learn better and perceive the model positively; and d) teachers are supportive of the model. However, the implementation of sport education in some contexts has not been without difficulties (Brunton, 2003; Hastie, 1998). It seems that we still have much to understand why sport education do not work in some settings and what might be difficulties which appear during implementation.

Sport education model is new to Hong Kong physical education teachers. Since the model is well received in most western countries, it seems that this model should be promoted locally. Therefore, one of the purposes of this study was to examine the difficulties the teachers may face when implementing the sport education model. Besides, the investigators were also interested to know the views of teachers and students on this model after their implementation and experiences. To achieve these objectives, a qualitative approach and multi-methods were employed. Teacher reflective journal, semi-structured teacher interviews, student questionnaire and lesson observation field notes were utilized as the research tools in the study. The participants for this study were two secondary school physical education teachers and 110 secondary school students in their schools. The teachers were asked to teach a unit of football lessons in the sport education model approach to two classes of students. They were also requested to keep a reflective journal that focused on their perceptions about the process of implementation the sport education approach as well as the reaction of the students to this teaching model. A post-teaching interview was conducted with each teacher individually. Questions focus on their views of using the sport education approach was developed to use as a guide during the interview. The interviews were audio-taped and later transcribed verbatim for analysis. Views of students toward the effectiveness of the instructional approach were also obtained through the use of a structured questionnaire at the end of the teaching unit. The field notes were taken during the lesson observations by the first investigator. Data were organized and analyzed through inductive analysis and constant comparison. Categories that arise frequently were combined to form themes.

Results revealed that the major difficulty faced by the teachers was the planning before the implementation of the model. Both teachers claimed that they had no local references to follow when planning. They also maintained that they had problems in planning how to motivate and help students to perform their assigned roles in the lessons. However, the teachers held positive views on the model as most students learnt actively and well in the lessons. Most students expressed that they understood more about the football games and the organizing of the competition. They also valued the learning of collaboration skills and team spirits in the lessons. The findings hold implications for the physical education practitioners and teacher educators in Hong Kong.

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CHARACTERISTICS OF ELITE SKIERS' COMPETITION ACTIVITY

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Appropriately and individually planned competition ensures consistent improvement in athlete's physical efficiency, good sportive form before the main competition. During Olympic years structure of competition activity and optimal number of starts have to be planned with regard to athletes' organism's potential to adapt competition loads and duration of recovery after competition activity loads (Шустин, 2003; Головачев, 2003).

Now the program of skiing competition is diverse: skiing competition in classical style ways, competition with separate start, competition with massive start, combined competition "Pursult" (half of the distance is skied in classical ways and another half of the distance is skied using skiing steps), individual and team sprint competition. Each way of skiing has specific requirements for adaptation of skier to competition activity (Раменская, 2000).

Problem of specialization of the world elite skiers in different skiing styles and particular competition programs is not analyzed much. Scientific literature lacks information about the amount of elite skiers' competition activity and its structure during preparation for the main start of the season.

Goal of the analysis — to survey the amount and structural components of the world elite skiers' competition activity during Olympic year's cycle.

Subject of the analysis — peculiarities of the competition activity of skiers' racers, who took 1—10 places in individual competition of Turin Olympic Winter Games.

Methods. Analysis methods that have been used: study of literary sources, comparative analysis, metaanalysis, and mathematical statistics. Analysis of competition activity during 2005/2006 season of skiers, who took 1—10 places in individual competition of Turin Olympic Winter Games, has been carried out.

Results. Skiers, who took 1—10 places in 30 km combined competition (Pursulte) 8—11 times took part in the World Skiing Cup and FIS category competitions before Olympic Games. Skiers 5—6 times took part in 15 km competitions, 1—2 times in 30 km competition and 1—2 times took part in Pursulte competition. Six skiers, who took places in the first decade in 30 km competition, were in the first decade of the strongest skiers in 50 km competition in free style skiing as well.

Skiers, who took 1—10 places in 15 km competition in classic style, took part in different skiing distance competitions 8—13 times before Olympic Games. These skiers also 2—6 times took part in skiing sprint competition. Skiers, who took 1—10 places in individual skiing sprint competition 4—7 times took part in skiing sprint competitions before Olympic starts. Skiers of this group (with exception of T. A. Hetland (Nor) did not take part in other individual games of Olympic skiing program.

Conclusion. Elite skiers can be divided into two groups according to the specifics of their competition activity: skiers of medium-long distances and skiers sprinters. There can be divided three groups of skiers according to elite skiers' strategy of preparation for the main starts and competition activity scoring: skiers of classic style, universal skiers, and skiers of sliding style.

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SMOKE AND ALCOHOL ADDICTION AMONG PHYSICAL EDUCATION TEACHERS

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According to the data from Lithuanian adult's healthy living observation project (*FINBALT HEALTH MONITOR*) spread of smoking among Lithuanian women had increased since 1994 yr. And spread of smoking among Lithuanian men had increased till 2000 yr. while decreased later. The occurrence of strong alcoholic drinks usage among men hadn't changed. Women started using alcoholic drinks more often. The consumption of beer increased as well. Alcohol and narcotic usage spread among adults as well as among schoolchildren. 15—16 years old Lithuanian schoolchildren research (ESPAD 99) data showed that smoking spread in country same as using of alcohol. The personal pedagogue's characteristics and his lifestyle have a very large educational impact on schoolchildren health education.

The aim of this study. To define spread of smoking and using alcohol among physical education (PE) teachers.

Material and methods. This investigation was performed during the 2005—2006 school years. The investigation involved 320 PE teachers (184 men and 136 women) who have been selected randomly from all Lithuanian secondary schools. The average age of all participants is 42.5 ± 21.5 years.

In this study we used anonymous questionnaire method. There was applied Lithuanian population lifestyle and practical nutrition questionnaire from National nutrition center and World Health organisation survey, which was accomplished in 1997 year (Kadziauskienė ir kt., 1999).

The SPSS for WINDOWS analytical software was employed for the analysis of the research results and we calculated these statistical parameters: arithmetical mean (V), significance of mean value criterion (p), where results were statistically significant, when $p < 0.05$.

Results. Considering the research data men (29%) smoke more compare to women (15%). Middle-aged 36—50 years old (25%) and elder 51—64 years (23%) smoke more than junior 21—35 years old teachers (14%) ($p < 0.05$). Only 10% of men and 30% of women were not using alcohol at all. And the difference between results is statistically significant ($p < 0.05$). Strong alcoholic drinks mostly use middle-aged 36—50 years old teachers. But only 9% of men and 7% of women don't use beer at all. Significantly ($p < 0.05$) lower consumption of beer indicated in younger 21—35 years old PE teachers. Significantly ($p < 0.05$) more PE men (28%) teachers than women PE teachers (15%) weren't using wine at all. Junior and middle-aged PE teachers are fond of wine more than and elder PE teachers.

Summarizing this study data the following conclusions have been formulated:

1. Smoking habits spread among PE teachers: significantly ($p < 0.05$) more men (29%) smoke compare to women (15%).

2. There are pretty large consumption of alcoholic drinks: Only 10% of men and 30% of women were not using alcohol at all. PE men teachers more than women PE teachers use strong alcoholic drinks and beer, though women drink more wine. Junior (21—35 years old) PE teachers use more wine, middle-aged (36—50 years old) PE teachers use more strong alcoholic drinks, and elder (51—64 years) PE teachers use more beer.

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LITHUANIAN SPORT TOURISM AND LEISURE ENTREPRENEURSHIP

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Introduction

Connections between sport and tourism can be traced to ancient times. Sport tourism is often seen as of more recent origin than either sport or tourism. Typical of many definitions is offered by Paul De Knop & Joy Standeven (1998) that sport tourism comprises all forms of active and passive involvement in sporting activity, participated in casually or in an organized way for noncommercial or business/commercial reasons, that necessitates travel away from home and work locality. Such a definition, while allowing an inclusive approach to the study of sports tourism, does little more than combine widely-accepted definitions of sport and tourism (Weed, 2005). Sport tourism encompasses three main types of travel and sport participation: *Active sport tourism; Event sport tourism; Nostalgia sport tourism* (Gibson, 1998 a and b).

In Weed analysis with Bull (2004, p. 37) they explicitly locate sports tourism as a “social, economic and cultural phenomenon”. The aim of this research is to analyze the possibilities of sport tourism development in Lithuania.

Methods

The survey was conducted through self-administered questionnaires completed by Lithuanian sport tourism organizations and tourism enterprises during January-February, 2006.

The 10-pages questionnaire is divided into 5 sections: basic demographics, human resource management, vocational needs & training, marketing activities, use of information and communication technologies. The research data has been processed applying SPSS software.

Results

The research results have showed that Lithuanian sport tourism organizations have been in business for four years in average and tourism enterprises — for eight years. The programs and/or types of services provided by sport tourism organizations are active sport tourism and learning or practicing a sport or physical activity. Sport tourism organizations are more numerous in staff than tourism enterprises. The survey results revealed that the majority of respondents from both groups do not have any structured systems of vocational needs analysis and training. However, more than half of the respondents assess the efficiency of employee training. The survey results revealed that both sport tourism organizations and tourism enterprises pursue similar marketing goals: attract new customers, provide better products and services than those of competitors and retain customer satisfaction. The basic activities and services offered by sport tourism organizations are: active recreation, arrangement of sport camps and sport events, arrangement of sport competitions, etc. The basic information and communication technologies (ICT) employed by sport tourism organizations are intranet, Internet, e-mail and homepage. Respondents of both groups most often use their homepages to promote and advertise the company's products, services and abilities, to respond to the clients about the availability of products, booking terms etc.

Discussion

Since sport tourism is a prevalent and growing phenomenon, we have to find out what are the possibilities of sport tourism development in Lithuania? Is it necessary to have structured systems of vocational needs analysis and training? Why do you think so?

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THE POSSIBILITY OF USING THE METHOD OF DATA EMBEDDING IN THE ANALYSIS OF FINGER TAPPING TEST

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The aim of the study — to determine the using possibility of method of data embedding in finger Tapping test.

The finger Tapping test is using to estimate the working abilitie and functional state of the central nervous system. The data are registred by using special computer program, created in laboratory of Kinesiology of Academy of Kaunas Physical Education, together with scientistes from university of Physical Education of Ukrain. The programme gives standardized values, which let to compare the working abilities and functional states of the central nervous system. The computerized programme gives standardized values of recorded parametres: mobility, asymmetry, fatigue, general efficiency, anaerobic efficiency and anaerobic load capacity.

The subjects of the study were 10 athletes, aged 12—25 years old. The study was performed in the Kinesiology laboratory of Lithuanian Academy of Physical Education in 2006 years. All the subjects have done clasical 60 seconds finger Tapping test, while the time intervals are recorded by miliseconds between separate motions.

The method of data embedding of finger Tapping test have done in Kaunas University of Technology in Department of Sciences of Mathematics. The data embedding is used to develop the informative of received data. The gotten data sequence are called as time series: $\{x_1, x_2, x_3, \dots, x_n\}$. Here $x_1, x_2, x_3, \dots, x_n$ is time intervals (measured by milisecond), between different presses of computer keyboard performing finger Tapping test. We can make from them informative vectors, it means to make data emdebing.

The process is performed subject to embedding the needed “scallop”, that to get the useful information. The informative vector must to be the m-line, then we have the vector sequence: $(x_1, x_2, x_3, \dots, x_m)^T, (x_2, x_3, x_4, \dots, x_{m+1})^T, (x_3, x_4, x_5, \dots, x_{m+2})^T, \dots, (x_k, x_{k+1}, x_{k+2}, \dots, x_{m+k-1})^T$, where $m+k-1=n$ (n – the number of data). Now we can respectively call the gotten vectors:

$$X_1 = \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ \vdots \\ x_m \end{bmatrix}, X_2 = \begin{bmatrix} x_2 \\ x_3 \\ x_4 \\ \vdots \\ x_{m+1} \end{bmatrix}, X_3 = \begin{bmatrix} x_3 \\ x_4 \\ x_5 \\ \vdots \\ x_{m+2} \end{bmatrix}, \dots, X_l = \begin{bmatrix} x_k \\ x_{k+1} \\ x_{k+2} \\ \vdots \\ x_{m+k-1} \end{bmatrix}. \text{ So we got new datas —}$$

vectors, with which can make mathematical operations — operations with vectors. The correlation index is calculated by formula $C(\varepsilon) \equiv \frac{1}{N^2} \sum_{\substack{i,j=1 \\ i \neq j}}^N H(\varepsilon - |x_i - x_j|)$. The correlation index helps to get

the new information about particularly of central nervous system of subjects, when we are actualizing the motor acts and also we can compare different experemental groups.

The results have showed, that using 2 “scallop” in method of data embedding, the evaluated datas are not full-scale. But using 3 or more “scallop” the less repartition of data show up, that let to process the available datas and to give the right conclusions. So the full-scale information about peculiarity of central nervous system during finger Tapping test, are more informative, when 3 “scallop” are using in method of data embedding. But using 4 “scallop” or more — the information becomes more clumsy.

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CARDIORESPIRATORY SYSTEM PARAMETERS DURING INTERMITTENT INCREASING CYCLING EXERCISE AFTER PRIOR ANAEROBIC LOAD

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This study was aimed to determine the influence of prior anaerobic load on the cardiorespiratory system and blood lactate parameters during intermittent increasing cycling exercise.

Methods.

Seven physical education academy female students (age — 22.1 (1.5) years, height — 169.2 (6.6) cm, weight — 57.7 (5.1) kg, maximal oxygen consumption — 41.9 (5.2) ml·kg⁻¹·min⁻¹) performed the continuous increasing test until exhaustion and two intermittent increasing tests (IT) on Monark ergometer. One of the IT was conducted 15 min after maximal anaerobic 30 s load (MAL), e.g. under conditions of metabolic acidosis. Pulmonary gas exchange was measured breath-by-breath throughout all tests. Maximal oxygen consumption ($\dot{V}O_2$ max) was determined as the highest value during 20 s periods before the subjects' volitional termination of the continuous increasing test. The heart rate (HR) was continuously recorded using „Polar S810“ HR monitor (Finland). Blood samples were collected from the fingertip for immediate analysis of blood lactate concentration („Eksan-G“, Kulis et al., 1988). The samples were taken before and at the end of each load phase of IT.

Results.

The dynamics of blood lactate concentration [La] during IT was changed after MAL. After decreasing at initial loads (before test 7.83 (1.36); 17 W — 6.05 (1.49); 50 W — 4.47 (1.36); 75 W — 3.18 (1.15); 100 W — 3.08 (1.08) mmol·l⁻¹) ($P < 0.05$), it started increasing at the intensities near the lactate threshold (125 W — 3.92 (1.26) mmol·l⁻¹; 150 W — 5.19 (1.59) mmol·l⁻¹). Under both conditions the HR was linearly increasing as the function of work intensity, but was significantly higher at lower intensities after MAL ($P < 0.05$). The values of peak end-tidal CO₂ pressure (P_{ET}CO₂) were significantly decreased at all intensities in comparison with control values ($P < 0.05$). The dynamics and values of oxygen uptake, CO₂ output and pulmonary ventilation did not significantly change under conditions of metabolic acidosis ($P > 0.05$).

Conclusion.

The prior anaerobic load causes acidosis and influence the dynamics of blood lactate concentration and HR but has only minor effect on the dynamics of other pulmonary gas exchange parameters during intermittent increasing cycling exercise.

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LOCAL COLD TEMPERATURE EFFECTS ON PEAK TORQUE AND AVERAGE POWER

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The aim of the study — to evaluate cooling functioning of knee flexors and extensors during fatiguing exercise and recovery.

Methods of the study. The participants of the study were 10 healthy male, age: 19—23 years; height — 177.8 ± 5.8 ; weight — 78.2 ± 6.1 . The study was performed in the human motoric laboratory of Lithuanian Academy of Physical Education in year 2005/2006. All the subjects have done non-stop 50 repetitions of knee flexion and extension at 450 °/s range motion on “Biodex System Pro 3” device and the same dynamic exercise was repeated after the quadriceps muscle had been cool. Before and after con/con fatigue exercise (10 min (post-exercise), 30 min, 60 min and 24 hours) were done the test — three repetitions of full range movement in knee joint at the speed of 450 °/s (corrected after considering gravitation). There was 1 minute break between each measurement (first experiment) and the same exercise was repeated after the quadriceps muscle had been cooling (second experiment).

Results and discussion. After analysis of values, we were found that muscle cooling before exercise didn't increase power in max speed and average power of knee extensors and flexors for males. Data analysis has shown that male obtained higher values of power in max speed and average power in flexion and extension at 450 °/s velocity, then muscle was cooling, but it's not credibly ($p > 0.05$) (Fig. 1.). The efficacy of pre-cooling before prolonged submaximal exercise has been demonstrated with a variety of pre-cooling modalities, such as showers and cool water immersion (Lee and Haymes, 1995; Booth et al., 1997). Many athletic and occupational activities, such as the points race in track cycling or criteriums in road cycling, require high-intensity efforts interspersed with periods of moderate exercise, a type of effort also impaired by high ambient temperatures (Kay et al., 2001; Yasumatsu et al., 2001). Therefore, precooling should also reduce the impact of fatigue not only during endurance activities, but also during repeated high-intensity sprint exercise.

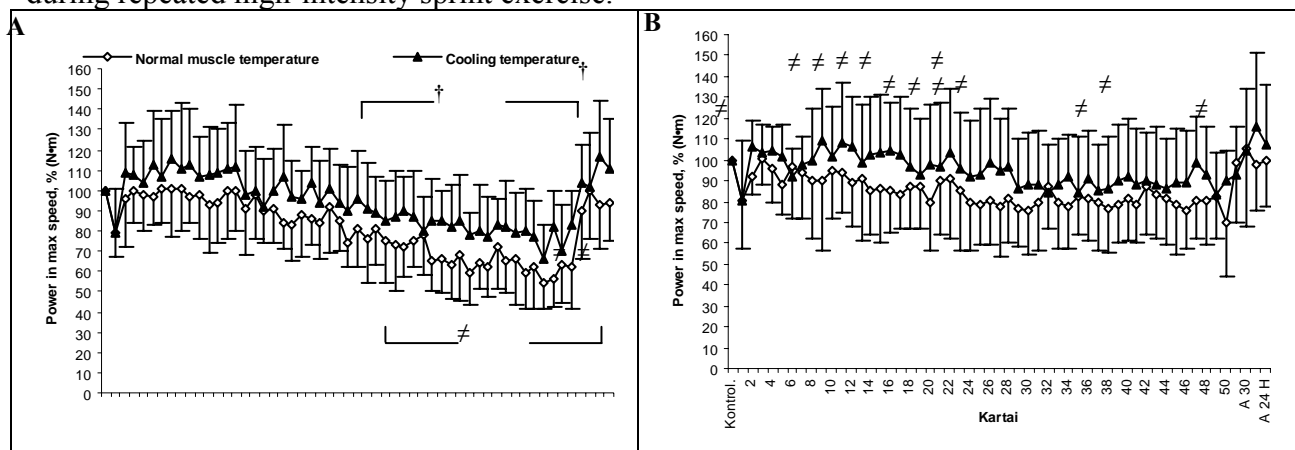


Fig. 1. Knee flexion and extension fatigue exercise at 450 °/s range motion (power in max speed)

The main conclusion. Muscle cooling before exercise didn't increase power in max speed and average power of knee extensors and flexors for males.

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FUNCTIONAL STATE OF THE CENTRAL NERVOUS SYSTEM AND BALANCE ABILITIES OF 11—14 YEAR OLD CHILDREN

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The aim of the study — to determine the functional state and efficiency of central nervous system and balance abilities in 11—14 years old children and correlation between them.

Methods of the study. The subjects of the study were 66 healthy children, grouped together into four groups according to age: 11 years old children (n = 14), 12 years old children (n = 17), 13 years old children (n = 16) and 14 years old children (n = 19). The study was performed in the Kinesiology laboratory of Lithuanian Academy of Physical Education in 2006 winter. All the subjects have done 2 functional exercise tests: classical 40 s finger Taping test, while the number of movements recorded in every 5 seconds and 1 min stabilographical test to estimate their balance.

The working ability and functional state of the central nervous system can be registered by using special computer program, created in laboratory of Kinesiology of Academy of Kaunas Physical Education, together with scientists from university of Physical Education of Ukraine. The programme gives standardized values, which let to compare the working abilities and functional states of the central nervous system. The computerized programme gives standardized values of recorded parameters: mobility, asymmetry, fatigue, general efficiency, anaerobic efficiency and anaerobic load capacity.

Stabilography software LIBRA (“Electronic Balance Board”) consists of stabilographical platform and special computer program for recording and assessment indices. The computerized programme gives standardized values of recorded parameters: total area to the left and right sides, external area to the left and right sides, external time, recovery time.

Results and discussion. The results have showed, that balance evaluation of stabilographical parameters with open eyes of 11—14 years old childrens’ were lower than with closed eyes ($p > 0.05$), that shows better compensation of the balance, i.e., significant role of visual control in performance of balance tasks. Equally there were indicated that the parameters of balance are increasing according to age ($p > 0.05$). This tendency were obtained in the stages of 11—14 and 11—13 years old ($p > 0.05$). The peak results of changes were indicated in the stages of 12—13 years old, but significant differences were in balance indices of total area to the right. The central nervous system parameters: mobility, fatigue, general efficiency, anaerobic efficiency and anaerobic load capacity increased according to age ($p > 0.05$). The calculation of correlation between the Taping tests’ parameters: mobility, fatigue, general efficiency and the stabilographical parameters: total area, external area, external time to the left and to the right have showed the slight and mean link. That proves that Taping test and stabilographical indices are interdependent.

Conclusions. 1. The determined balance parameters of stabilographical test in all stages of age with open eyes are better than with closed by performing the same test.

2. In the stage of 11—14 years proceed the intensive improvement of motion control: improvement of central nervous system and balance parameters.

3. The calculation of correlation between central nervous system functional state and balance parameters have showed the slight and mean correlative link.

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IMPACT OF FATIGUE ON JUMP SHOT HEIGHT AND ACCURACY OVER A LONGER SHOOTING DISTANCE IN BASKETBALL

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Modern elite basketball imposes a considerable effort and loading on players (Dežman, & Erčulj, 2005) and simultaneously requires a high degree of accuracy (Jovanović-Golubović, & Jovanović, 2003). This study basically aimed to establish how a gradual increase in effort (fatigue) affects the jump height and accuracy of shots at the basket.

For this purpose, Primož Brezec, an elite basketball player who is a member of the Slovenian National Basketball Team and a successful NBA player in the Charlotte Bobcats performed seven series of 20 shots from a distance of 7.24 metres which, in line with the NBA league rules, constitutes a three-point shot. All shots were executed in 4-second intervals while the OptoJump device (Globus, Italy) was used to measure the height of each jump shot. The accuracy of shots was established on the basis of the number of goals and distance from the CB point (centre of the ball) to the CR point (centre of the rim of the basket). Thus, for each shot a kinematic analysis was applied in the APAS system to calculate the parabolas of ball flight and the distance between the two points mentioned. During an individual series of shots the subject player performed a special basketball motor task consisting of running, a defensive slide and jumps. The effort gradually increased with each motor task and, in the meantime, the subject's heart rate and concentration of lactates in his blood were measured.

Table 1
Study results

	HRRun	HRShot	La	JumpH	shotT/G	CB-CR
Series 1	173.8	149.0	0.8	11.3	20/9	13.5
Series 2	185.4	180.2	2.1	12.0	20/10	16.6
Series 3	189.0	186.2	3.9	11.7	20/9	15.1
Series 4	195.2	192.9	4.5	10.6	20/8	15.4
Series 5	197.2	196.6	6.2	10.0	20/12	13.7
Series 6	198.6	197.5	8.1	9.4	20/8	15.6
Series 7		197.6	9.7	8.7	20/6	14.6
AV	189.9	185.7	5.0	10.5	140/62	14.9
F	192.531	374.343		26.167	.690	.250
F (sig.)	.000	.000		.000	.658	.959

Legend:

HRRun (average heart rate during a special basketball motor task)

HRShot (average heart rate while shooting at the basket)

La (concentration of lactates in the blood after the end of the motor task and before the series of shots at the basket)

JumpH (jump height in cm, established by the OptoJump device)

shotT/G (number of throws/number of goals)

CB-CR (distance between the centre of the ball and the centre of the rim in cm)

The results of the study (Table 1) show that the jump height decreases on average with each series of shots (with the exception of series 2) and that the differences between the series are statistically significant ($p < 0.01$).

There are no statistically significant differences between the individual series of shots in terms of shooting accuracy and/or number of goals. The number of goals decreased drastically in the last series, i.e. in the conditions of maximum fatigue (heart rate: 197 beats/min, lactate concentration: 9.7 mmol/l).

The average distance between the CB point and the CR point ranges between 13.5 and 16.6 cm, however, it does not increase with fatigue.

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ACTIVIZATION OF COGNITIVE ACTIVITY IN STUDENTS FROM HIGHER SCHOOLS OF PHYSICAL EDUCATION BY USING INFORMATION AND EDUCATIONAL TECHNOLOGIES

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Introduction. The process of modernization of the system for training future specialists in the area of physical education and sports determines the basic features of its development. It involves the change in principles for selection of the contents of education with orientation towards the development of person's creative abilities as well as the issues of search and inculcation in educational process of effective means and the methods of education promoting activization of students' cognitive activity [2, 3].

The aim of the research is measure the efficiency of a technique for the activization of cognitive activity in students from higher schools of physical education by using information and educational technologies.

Methods. The methods applied in the research include the analysis of scientific and methodological literature, pedagogical supervision, survey in the form of questionnaire, pedagogical testing, pedagogical experiment, methods of the logical and mathematical analysis.

Results. During the research the technique used for the activization of cognitive activity in students from higher schools of physical education is developed which involves the use of information technologies and active methods of education. The basic characteristics of this technique are as follows: the use of educational tasks directed on mastering skills independently to solve relevant tasks by using information technologies; the performance of individual or group research projects with their further presentation; the use of educational process of elements of problem training [1].

The results of a pedagogical experiment testify that the use of the technique promotes more successful assimilation of theoretical knowledge by students (*theoretical aspect of cognitive activity*), higher quality in carrying out educational tasks (*practical aspect of cognitive activity*), increase of the level of cognitive activity and the degree of satisfaction in the process of education (*motivational aspect of cognitive activity*).

Discussion / Conclusion. The activization of students' cognitive activity can be carried out successfully under certain organizational and methodical conditions which are:

- the teacher's skill to operate cognitive activity of students;
- the quality of program and methodological maintenance of educational process;
- the organization of educational process taking into account students' individual features;
- the organization of students' cognitive activity in relation to the specificity of their future professional work;
- the level of students' independent cognitive activity.

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DISTANCE EDUCATIONAL TECHNOLOGIES APPLIED IN THE SYSTEM OF SPECIALISTS' TRAINING IN THE AREA OF PHYSICAL EDUCATION AND SPORTS

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Introduction. One of the main trends in realization of the Concept of modernization of education in the Russian Federation for the period until the year 2010 is the creation of a system for open and distance education. It is especially important in the context of the development on of a single international educational space. However, a proper solution was not found for this issue in relation to the system of specialist training in physical education and sports [2].

A number of methods are distinguished in the organization of distance education, such as: case-study, TV and IT technologies. This present research discusses the creation of the network of distance education technologies and electronic educational material for students of higher education institutions in the area of physical education [1].

The objectives of the research: 1) to create a model of the electronic hypertext manual to be used by students of physical education in the system of distance education; 2) evaluation of the effectiveness of electronic publications in educational process in higher education institutions in the area of physical education.

Methods. The methods applied in the research are as follows: the analysis of scientific, methodological and technical literature, pedagogical modeling and designing, a pedagogical experiment and methods of mathematical statistics.

Results. The model of the electronic manual has been developed during the research applying the possibilities of web- (html, dhtml, php) and flash-technologies. The structure of the electronic manual includes the following sections: course description, study plan, teaching material, slides of lectures, material for seminars, examination questions, a list of references, supporting material, handouts, tests and self-check tests. The model of the manual provides a possibility to include the data in any standard formats (*.doc, *.xls, *.ppt, *.dbf, *.pdf, *.swf, etc.) and its use in the form of a local and online source. On the basis of this model, several electronic manuals have been developed for the courses of "Information Technologies", "Information technologies Applied in Physical Education and Sports", "Basics of Mathematical Statistics", "Cyclic Sports" and others are created some.

Discussion. The results of organizational and experimental work in the introduction of electronic manuals to the system of distance education for students of higher education institutions witness that the most acceptable for the organization of distance education are case-studies and network technologies. However it is necessary to take into account, that these technologies have certain characteristics (delivery of teaching material, methods in the assessment of knowledge, a mode of testing, communication between teachers and students, management of educational process).

Conclusion. On the basis of the available recent developments, the intention is to create a system of management of courses (a part of a scientific and educational portal "Sports Science") together with the realization of interactive sub-systems of consultation, testing, online seminars, an open library and internet resources.

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HEALTH OF CHILDREN AND TEENAGERS: SOCIAL AND PEDAGOGICAL ASPECTS OF SELF-KEEPING BEHAVIOUR OF SCHOOLBOYS OF THE URAL REGION AND NORTHERN KAZAKHSTAN

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Introduction. Modern social policy in sphere of public health services is focused, basically, on improvement of quality of health services, instead of on formation of bases sanitary and hygienic and physical culture, healthy style of a life and “self-keeping” behaviour. As foreign and Russian researchers mark, to studying of a state of health, a way of life and self-keeping behaviour of teenagers until recently was not given due attention. It speaks that children of school age were examined as social group which is characterized by the least risk of death rate and disease, on the one hand, and rather low (in comparison with other groups of the population) a level of social and political activity, — on the other hand. The importance of a problem of research self-keeping behaviour of schoolboys is caused: first, special importance of the teenage period for all subsequent human life; second, presence of negative tendencies in a state of health of modern Russian schoolboys; the third, what teenagers represent potential productive work and populated resources of our country.

The aim of the research is to reveal social and pedagogical factors promoting the formation of self-keeping behaviour at teenagers, the reasons of physical culture and healthy lifestyle.

Methods. Research was carried out within the framework of realization of the international scientific program “Health Behaviour in School-aged Children” in Ural region during the period with 1997 for 2005 years at participation of schoolboys 11, 13 and 15 years (n = 2000). During research it was used sociological, pedagogical, psychological methods, and also methods of the logic and mathematical analysis.

Results. During research approbation of technology of social and pedagogical monitoring is executed; sociological research is carried out on the basis of comprehensive schools of Chelyabinsk (Russia) and Kostanay (Republic Kazakhstan) (n=2000); the archive of the social information is created; regional features self-keeping behaviour of teenagers are revealed; methodical recommendations on formation at children and teenagers of bases self-keeping behaviour and healthy style of a life are developed.

Discussion / Conclusion. The analysis of results of research testify to the following. First, health of teenagers has essential specificity of studying which essence consists that a self-estimation of health and its real condition is connected not so much to actual diseases, how many with biological, social and cultural circumstances. Second, it is necessary to recognize officially teenagers as group of risk and accordingly to them to concern. Measures on preservation and strengthening of health of teenagers should take into account social, pedagogical and psychological features of a life and activity of teenagers. Thirdly, the modern system of physical education of children and teenagers not to the full meets to showed requirements and requires innovative transformation.

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PHYSICAL ACTIVITY AND CHILDREN'S HEALTH: WHAT IS HAPPENING

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Until recently, we knew very little about the levels and patterns of physical activity in children. We knew even less about changes in these over time and virtually nothing about whether children were 'active enough' (to be healthy). In contrast, there has been much media interest in children's perceived 'sedentary lifestyles', the escalating levels of childhood obesity and a general concern that children should be encouraged to do more exercise.

Accordingly, recommended levels of activity for children were established, but these were based on very limited empirical evidence — relying more on our understanding of paediatric exercise physiology combined with expert opinion.

New measurement techniques for assessing physical activity — especially the more widespread use of objective methods — have greatly increased our understanding of how active children are; what their patterns of activity look like, and how these differ between children of different age, gender and anthropometry.

According to the WHO definition of health there should be a lot of options to measure different aspects of health in children. However, we still struggle to define 'good health'; because most parameters are continuous and children may be well functioning even if they have high cardiovascular risk factor levels including being overweight or fat. We therefore try to describe factors which may increase risk in the future, but we also try to explore the physiological determinants of the increase in the risk factors in order to recommend which type and amount of physical activity is beneficial to health. What we specifically need to know more about are regarding physical activity and health is:

- What levels and patterns of activity are most effective in preventing or delaying the onset of different chronic conditions?
- What 'counts' as healthy activity in children — volume? intensity? sustained bouts?
- Which is more important — increasing physical activity or reducing sedentariness?
- What are the determinants of physical activity and sedentariness in children?
- How do the determinants of activity and sedentariness vary between children of differing age, gender, ethnicity, and social circumstances?
- What is the relative importance of physical activity and fitness?
- What interventions will be most effective in promoting higher levels of physical activity in (different types of) children?
- Are there children who are genetically predisposed to gain more health benefit from increased activity — and others who will not benefit?

This presentation will address the major issues by summarising what we know, what we don't know, what we most urgently need to know, and the methods we might employ to find out.

THE EFFECTS OF SEASONAL ENVIRONMENTAL VARIATIONS ON THE BODY COMPOSITION AND BIOLOGICAL PARAMETERS IN ATHLETIC AND NON-ATHLETIC MALE YOUTH

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The aim of this study was to profile the body composition, functional and biochemical parameters of athletic and non-athletic youth men at various seasons periods of year.

Methods. This study is part of longitudinal study. Over a period 2004—2005 years five repeated measurements were carried out. The initial age of the subjects at the beginning of the study was 19.5 ± 0.3 years.

The present study uses two groups of youth men (athletic ($n = 13$) and non-athletic ($n = 11$)). Therefore at 10—12 weeks of measurement not only body composition parameters, but also biological parameters (blood pressure, heart rate, cholechol and triacylglycerides in the blood) were measured. Total cholesterol and triacylglycerides in capillary blood was measured with direct method used “Accutrend” (Germany). A blood pressure (systolic and diastolic) were measured with a sphyngomanometer by Korotkoff method on the left upper arm. Body fatness and body water was operationalized using the whole body bioelectrical impedance analysis (BIA). “Tanita” monitor (Japan) was used for the BIA technique.

The quarterly measures of body composition, blood pressure and biochemical parameters were converted to seasonal averages. We are used to examine variables at adjacent month of years (month June vs September, September vs November, November vs February and February vs May). Multiple linear regression was used to examine. Based on these regression models partial correlations among fat and water changes, blood pressure and biochemical (cholesterol and triacylglycerols) parameters changes were reported. This analysis was repeated with adjustments for change in fat free mass and water mass. Statistical significance was accepted at $p < 0.05$.

Results. Significant difference were estimated percentage body fat and water at specific assessments throughout the June—September, when compared to the June (pre-season period) assessment. However results demonstrated no significant change in estimated body fat and water percentage between the September and November assessments.

Table 1 presents fat mass, water mass and gender-adjusted partial correlation coefficients among averages for year months, body fat mass, water mass systolic pressure, diastolic pressure, total cholesterol, triacylglycerol concentration in the blood (mean \pm SD) estimated at September.

Parameter	Total body mass (kg)	Body fat mass (kg)	Fat free mass (kg)	Water mass (kg)	Water free mass (kg)
Systolic blood pressure (mm Hg)	0.59*	0.53*	0.49*	-0.09	-0.07
Diastolic blood pressure (mm Hg)	0.31*	0.25*	0.26*	-0.03	-0.03
Total cholesterol (mmol / l)	0.23*	0.34*	-0.20*	-0.07	-0.08
Triacylglycerols (mmol / l)	0.64	0.47*	-0.09	-0.05	-0.03

Note. * correlation coefficient significant ($p < 0.05$) when compared with data at June.

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CHANGES AND INTERDEPENDENCE OF PHYSICAL DEVELOPMENT AND GENERAL PHYSICAL READINESS OF ICE HOCKEY PLAYERS DURING PUBERTAL PERIOD

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The main and most important aim of sports training is the training of elite athletes. In the analysis of various sports results it is frequently essential that the interdependence of the quantitative indices characterizing them be determined. After clearing up the causality of the phenomenon studied it is easier to reveal the influence of various factors on sports performance. Our study pursues the aim on the basis of developmental indices of the athletes body (height, body mass) to establish correlation ties with changes in the results of general physical readiness of athletes during the pubertal period (13—15 years of age).

The methods of research used in the study were as follows: analysis of literary sources on the subject, pedagogical experiment, testing, mathematical statistics (establishing correlation ties, establishing reliability of arithmetical mean for changes in results) and comparative analysis. The organization of the study: the subjects were 13—15 year-old children, members of the Kaunas ice hockey team. During the period of the three years changes and interdependence of physical development and general physical readiness training the young athletes according to an experimental programme have been observed. Results of the study and discussion. It has been established that the average yearly increase in the height of ice hockey players was 6.5 cm. This corresponds to average height of children of the same age. The greatest changes in the growth of ice hockey players was observed in their 15th year. Body mass of ice hockey players was smaller, compared to body mass indices of children of the same age, not regularly engaged in sport (Gailiūnienė, Kontvainis, 1994). There was an improvement in the results of general physical readiness, but not identical in respect to various physical properties.

Thus, we have found that various physical properties during the period of study have improved as follows: explosive force and horizontal height — by 10.7%; vertical height — by 9.7%; speed and 20 m running from run — by 8.6%; force speed and 30 m standing run — by 4.6%; 20 m standing run — by 4.0%; handgrip power (dynamometry) — right hand by 27.0 % and left hand — by 26.0 %; force endurance (pull-ups) — by 22.0%; agility (special test) — by 6.4% and speed endurance (300 m running) — by 12.0% respectively.

Establishing correlation ties between physical development and physical properties during researching I we have found the greatest direct correlation of height with explosive force (the long jump) and handgrip dynamometry. The strongest reverse correlation with the physical property of agility (special test) was observed. There was the strongest direct correlation of weight with handgrip dynamometry and explosive force (the high jump). There was also the smallest correlation of weight with the physical property of agility (special test) in the athletes studied. During research II the strongest direct correlation of height with speed endurance (300 m running) and the weakest one with agility was observed. The strongest direct correlation of weight with handgrip dynamometry and the weakest one with agility was observed too. During research III the strongest direct correlation of height with explosive force (the long jump) and the smallest, i.e. reverse — with speed endurance has been found. The strongest direct correlation of weight of athletes with explosive force (the high jump) and the weakest one — with speed endurance (300 m running) has been registered.

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EFFECT OF DIFFERENT TRAINING METHODS ON ENDURANCE OF NOVICE ORIENTEERS

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Introduction. Aerobic endurance is one of the most important physical qualities which predetermine the result in orienteering sport (Creagh, Reilly, 1997). That is why it is important to pay attention for endurance training at as early stage of training of an orienteer as possible. Several questions must be answered: what method for endurance training is effective during workout of novice orienteers? is it possible to apply the acknowledged methods for endurance training in other sport branches to workout of a novice orienteer? how to adjust both endurance and technical training while striving for complexity during workout? etc.

As the researchers state, one of the most important factors predetermining the increase of aerobic endurance is intensity of training (Baquet et al., 2003). However, it is rather difficult to control the intensity of training during workout of novice orienteers. One of the ways to solve this practical problem is organization of workout according to the interval method.

Aim of the paper was to find out how differently organized (according to interval and continuous methods respectfully) workouts influence endurance of novice orienteers.

Methods and organization. Thirteen teenagers of 12—13 years old took part in the research. The following methods were applied during the investigation: testing, training experiment, methods of mathematical statistics. *Testing.* Endurance of the participants investigated was measured both before the experiment and after it. In order to measure endurance two different field tests were chosen: a) a cross-country run of 1.25 km (a test for maximum effort); b) heart rate (HR) while running at a fixed 2.85 m/s speed (a test for sub-maximum effort). HR was registered by a heart rate monitor Polar 610i. *Training experiment.* Orienteers of both experimental and control groups attended 3 training activities per week. Duration of the experiment was 6 weeks (18 training activities). Training of orienteers of the experimental group (n=7) was organized according to the following scheme: two according to the interval method and one according to the continuous method. All training activities of the control group of orienteers (n=6) were organized according to the continuous method. While applying the interval method to training in experimental group, the orienteers investigated have mastered three orienteering races including breaks for rest. The proportion of work and rest was 2:1—1.5 (approx. 5—8 min: 3—4 min; rest was passive, during it the mastered race was being analyzed). While applying the continuous method to training, the investigated orienteers have mastered one orienteering race (average duration was 20—22 min).

Results. It was found out that both training methods had made impact on endurance of novice orienteers. The result of cross-country run of the experimental group has changed from 410 ± 24.3 s down to 389.7 ± 29.1 ($p < 0.05$). The result of the control group has changed less, however, statistically significantly ($p < 0.05$): from 416.3 ± 35.7 down to 404.3 ± 34.7 s. While running at a fixed speed of 2.85 m/s, the HR in the experimental group has decreased from 175.9 beats/min. down to 170.3 beats/min ($p < 0.05$), and in the control group — from 176.8 down to 172.2 beats/min. After the experiment was done, any significant inter-group difference of the test results was not noticed ($p > 0.05$). However, if to compare individual change averages, a significant difference of the results of the cross-country run of 1.25 km was found ($p < 0.05$): change of the experimental group was 20.3 s, and of the control group it was 12 s. Changes of HR during the sub-maximum load did not differ between the groups.

Conclusion. To sum up it may be stated that training of novice orienteers organized according to the interval method is more effective. Moreover, it is also more suitable for the reason that in its course it is possible to differentiate load for every single individual being trained, and sportsmen who get feedback concerning their success or failure quicker try to master the orienteering race even more rapidly. On the other hand, it is easier to reach a dangerous point for child's and teenager's health while organizing training according to the interval method.

THE QUALITY OF LIFE OF 16—18 YEARS OLD ATHLETIC AND NON-ATHLETIC SCHOOLCHILDREN

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Lately the biggest part of the studies of the quality of life is conducted in order to determine morbidity or the factors of the environment (1, 2). The studies conducted in Lithuania are oriented to causal analysis of health factors' influenced to the quality of life (3, 4).

The aim. To identify the quality of life of athletic and non-athletic schoolchildren aged 16—18 and determine the attitude to their health, attitude to physical activity.

Methods. 200 non-athletic schoolchildren (114 girls and 86 boys) and 100 athletic schoolchildren took part in sports (32 girls and 68 boys) in sports schools (73), clubs (23) and independently (4). The age of the subjects was from 16 to 18 years, average age 17.1 ± 0.4 . The anonymous questionnaire was used in the survey. The questionnaire consisted of 57 questions designed to evaluate external, interpersonal and personal quality of life and their health and physical activity along side.

Results. The attitude of schoolchildren to their health determined that 55% of athletic and 63% of non-athletic schoolchildren evaluated it as good. Athletic schoolchildren were happier and smoked cigarettes less frequently than non-athletic ($p < 0.05$). The athletic respondents cultivated one of the types of sports during the time free from lessons, and 87% of them exercised 7 and more hours per week. One of the most popular motives that encourage schoolchildren to exercise was the reinforcement of their health.

The external quality of life determined that more athletic schoolchildren were second children in four persons' families in comparison to non-athletic ($p < 0.05$). 56% of athletic and 20% of non-athletic schoolchildren's fathers and respectively 53% and 23% of mothers had higher education ($p < 0.05$). 43% and 11% of schoolchildren's families live in an individual house or a part of it ($p < 0.05$). This shows the better external quality of life of athletic schoolchildren than that of non-athletic ones.

Interpersonal quality of life was expressed by a better agreement of athletic schoolchildren with their fathers (19%), brothers and sisters (17%) and their contemporaries (75%) in comparison to non-athletic schoolchildren (6%, 10% and 36% respectively), and similar number of athletic (82%) and non-athletic (73%) schoolchildren was content with the relationships in their families. 31% of athletic and 9% non-athletic schoolchildren indicated that teachers show interest in them as in persons ($p < 0.05$).

Personal quality of life of athletic ones was better than that of non-athletic: 87% of athletic and 68% of non-athletic schoolchildren were worth the same amount of respect as others, 76% and 59% respectively can do everything as good as others ($p < 0.05$). 61% of athletic and 31% of non-athletic schoolchildren were content with their achievements ($p < 0.05$). Athletic schoolchildren less frequently (36%) than non-athletic (65%) were strained in school, studying for them less frequently was a hard job (35% and 53% respectively) and less frequently they were tired of studying (36% and 68% respectively). For most of athletic and half of non-athletic girls the communication with the friends of the opposite sex was easy ($p < 0.05$).

Conclusions. The quality of life according to the external, interpersonal relationships and self-evaluation of athletic schoolchildren was expressed better than of non-athletic. Their attitude of athletic to their health was better.

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LANGUAGE FOR SPECIAL PURPOSES AND THE DEVELOPMENT OF PEDAGOGICAL COMMUNICATION: TASKS FOR THE INSTITUTION OF HIGHER EDUCATION

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The discourse community is comprised of interrelated members possessing a set of common language usage goals, as well as methods for information interchange, moreover, they depend to a particular group of people (Swales, 1990; Trayner, 2000). The concept of a discourse community is based on a discourse (i. e. the organization of language is in the metasyntactic level), and on the individual changes while using the language, which are determined by searching the meaning in the process of interaction (The Cambridge Guide to Teaching English to Speakers of Other Languages, 2001). Consequently, a professional community is a discourse community, which is distinguished from the language elements characteristic to the specialists of a particular sphere. In other words, communication peculiarities and especially language expression means show professional competency and dependency to a particular social group. Social learning theory (Bandura, 1973) and the conception of lingual identity (Cuopland, 2001, Ковач, 2003) state that persons seeing to belong to a certain professional group deliberately or undesignedly trying to use the language of that group and be functionally correct. Therefore, we can judge about the person's professional competency not only from how he speaks, but also how he values other speakers, what concrete extralinguistical language variants (as a fact) he chooses to use.

Organisation of the research. 32 (2nd and 4th year) students of Šiauliai university whose studying programme is Physical and Sports Education took part in the research: 16 — 2nd year students (13 males and 3 females) and 16 — 4th year students (11 males and 5 females). The research was performed during the academic year 2003—2004. 2nd year students had to correct 30 sentences, 4th year students had to cross out incorrect variants from the list of 20 sentences. The research was divided into two phases: in the 1st phase the tasks for students were provided before the subject of Culture of Spoken and Written Language (in the beginning of a semester), in the 2nd phase the tasks for students were provided after the completion of the mentioned course (in the end of a semester).

The results of the research. The results of the 2nd year students after the 1st phase of the research (before the subject) were as follows: the average number of wrong sentences was $12.75 \pm .75$ from 30 provided. After the 2nd phase (after the subject) the average number of wrong sentences decreased until the average number 7.79 ± 0.34 ($p < 0.001$). The results of the 4th year students were as follows: the average number of wrong sentences was 8.83 ± 0.56 after the 1st phase, and 7.19 ± 0.83 after the 2nd phase. The changes are statistically reliable ($p < 0.05$). The effect of teaching is noticeable in the population of males and females while they were 2nd and 4th year students, although it is unequally meaningful.

Summarizing. The most difficult part for 2nd and 4th year students was correcting the morphological and syntactical mistakes. The researchers were expecting that it will be easier for students to correct lexical mistakes, but the results showed that pervasive new barbarisms and misunderstanding of word meanings are very problematic for language users. It is more typical for 2nd year students. 4th year students were better at lexical tasks, but it was more difficult for them to solve morphological and word formation tasks.

The research revealed several problematic things: more attention should be paid on the content formation and form in the institution of higher education; students should be encouraged to speak the correct language. Complex activity would initiate the research on the condition of the contemporary language — does it satisfy the needs of modern information society, what is the development of the language, what is the effect of developing technologies on the language processes and etc.

MUSCLE RECRUITMENT DURING EXERCISE AND FATIGUE

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Recruitment during submaximal exercise. From animal work, it is known that that, in order to produce force, motor units are hierarchically recruited, controlled by the size of the motor unit. Slow type I fibres are recruited at low force levels and with increasing forces faster type II fibres become recruited. Also in humans there is evidence for an orderly recruitment of motor units. Recruitment during whole body exercise, such as cycling is investigated using glycogen depletion patterns in muscles fibres of biopsies taken before and after exercise. With this method only exercise can be studied with relative long durations during which additional recruitment of motor units will occur.

With a newly developed method, recruitment can be assessed by analysis of single fibres from biopsies taken after only a few contractions (Beltman et al. 2004). Whereas the glycogen method indicated that all type I fibres are activated at a relatively low intensity (40% VO₂max during cycling), the new method showed an increasing recruitment of type I fibres from low up to very high intensity (~90% of the maximal knee extension torque). At 75% VO₂max (which requires ~40% of maximal available force) most type IIA fibres were recruited. In contrast, we found that no type IIA fibres were recruited at 40% of maximal torque, indicating that during cycling IIA fibres may not initially be recruited but only later in the exercise.

Variability in capabilities for muscle activation. Some individuals appear to be far better in voluntarily activating their muscles than others. Whereas relatively high activation (~90%) can be reached by most subjects in simple isometric tasks as during a short lasting maximal voluntary contraction, at force failure of a sustained contraction some subjects are only able to activate 70% of their remaining capacity (de Ruiter et al., 2004 a). The variation in activation capabilities is even larger during an explosive attempt to generate isometric force as fast as possible. Voluntary explosive attempts were normalised for electrically evoked (8 pulses at 300 Hz) contractions. When for subjects with voluntary activation > 90% during a brief maximal contraction, the integrated torque over the first 40ms after force onset (TTI₄₀) in explosive attempts was expressed relative to the electrically evoked TTI₄₀, voluntary activation varied from 10 to 80%. This variation was highly related to the EMG measured over 40 ms before the force enhancement (de Ruiter et al., 2004 b). Moreover, variation in voluntary activation during explosive attempts of the knee extensor muscles was highly related to jump height (de Ruiter et al. 2006).

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THE EFFECTIVENESS OF USING LOW COMPRESSION TENNIS BALLS ON BEGINNING PLAYERS' SKILL LEARNING

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One of the aims of a tennis coach is to improve player performance and the typical coach will have a number of coaching methods and strategies they can employ to enhance this process. In addition the knowledge base, which underpins the coaching process, is constantly changing due to research in coaching methodology and individual experience. Such changes can take the form of alternative coaching styles or the use of new activities and equipment, amongst others. If new methods and ideas can be determined to improve player performance they will have the potential to affect future coaching practice and enhance the coaching process. This study examines how the use of modified equipment within the tennis coaching environment would influence skill learning. Specifically, we investigated the effects of low compression balls during regular coaching sessions on skill learning for beginning tennis players.

In order to assess the effectiveness of low compression balls on skill learning the study employed a quasi-experimental design supported by qualitative and descriptive data. Beginner tennis players took part in tennis coaching sessions, one group using the low compression balls while the other group used standard tennis balls. Both groups were administered a skills test at the beginning of a series of eight coaching sessions (pre-test) and again at the end (post-test). A statistical investigation of the difference between pre and post test results was carried out to determine the effect of low compression balls on skill learning. Additional qualitative data was obtained through interviews, video capture and the use of performance analysis software to analyse typical coaching sessions for each group. The multiple methods of data collection (skill test, interview, observational analysis) allowed the triangulation of data.

The skill test results indicated no difference in skill learning when comparing beginners coached using the low compression balls to those coached using the standard tennis balls. The non-significant differences between groups could, however, have also been affected by differences in mean age and previous experience characteristics of the groups and the relatively short amount of practice time between the initial and final skills test. The coaches' reported that the low compression balls appeared to have a positive effect on technique development, including aspects of technique that are related to improving the power of the shot without the ball going out of court compared with coaching this aspect with the standard ball. Additional benefits were that rallies went on longer providing more playing time and more opportunity for positive reinforcement. In order to provide a more conclusive answer to the effects of low compression balls on skill learning and technique development, recommendations for future research were established including a more controlled experimental environment and a larger sample size across a longer period of time.

AUTONOMY SUPPORT OF TEACHERS, PEERS AND PARENTS AMONG SCHOOLCHILDREN IN TRANSCONTEXTUAL MOTIVATION MODEL

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The trans-contextual model developed by Hagger et al. (2003) to investigate the determinants of the intentional physical activity behavior among adolescents adopts motivational constructs and frameworks from self-determination theory (Deci & Ryan, 1985), the theory of planned behavior (TBP; Ajzen, 1985), and the hierarchical model of motivation (Vallerand & Ratelle, 2002). This study proposes a motivational sequence in which perceived autonomy support from teachers in a physical education (PE) context and from peers and parents in a leisure-time physical activity context predict autonomous motivation, intentions, and physical activity behavior in leisure time. Also the differences in the components of this model between girls and boys are observed.

Participants were 626 students (Males = 228, Females = 398, *M* Age = 14.9 years, *SD* = 1.3, range: 13 to 18) studying in seven different schools in Estonia. A three-wave prospective design was used. At the first occasion of data collection (time 1), self-report measures of perceived autonomy support in PE and the perceived locus of causality in a PE context were administered (Hagger et al., 2003). One week later (time 2), a second questionnaire containing measures of the components of the theory of planned behavior (Ajzen, 1985), perceived autonomy support of peers and parents and perceived locus of causality in a leisure-time physical activity context (Mullan, Markland, & Ingledew, 1997) was administered. After five weeks, self-reported physical activity behavior was measured at a third point in time (time 3) using the Leisure-Time Exercise Questionnaire (LTEQ; Godin & Shephard, 1985). The goodness of the fit indexes were used to test the model fit by the LISREL 8.51.

The values of fit indexes (Comparative Fit Index .99; Root Mean Square Residual .042; Root Mean Square Error of Approximation .034 (CI .00 — .0065); Chi-Square 22.98/ df 23) confirmed the model fit. All together, the observed components of the model accounted 38 % of the variance in physical activity behavior. The analysis of path model indicated that the autonomous support of teacher had statistically significant direct effect only on motivation in PE context. The autonomous support of parents was related beyond the motivation in both context also with all constructs of TBP (attitude, subjective norms and perceived behavioral control). Boys perceived more autonomous support of teacher than girls, whereas no significant difference was followed in respect of autonomous support of peers and parents. Boys reported also higher values of intention, attitude, motivation and were more physically active in leisure time than girls.

The present study provides support for a model specifying the trans-contextual effects of perceived autonomy support of teachers, peers and parents on leisure-time physical activity intentions and behavior. In terms of practical recommendation based on current results, it is important that teachers in promotion the motivation and physical activity have to be more autonomously supportive especially in respect of girls.

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ACE AND ACE GENE POLYMORPHISM AND SOME CARDIAC PARAMETERS OF FENCING, BASKETBALL AND ENDURANCE PLAYERS

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Andreas (1997) stated that ACE is a key component of the rennin — angiotensin system thought to be important in the pathogenesis of hypertension. Tiret et al. (1992) reported that the I allele was characterized by lower ACE levels and D allele by higher ACE levels. We tested the hypotheses that ACEI/D substitution gene polymorphisms influence ACE serum concentration and some cardiac parameters, venous blood was obtained for genomic DNA. Each participant underwent a medical history and physical examination. None had hypertension or medical illness, blood pressure, heart rate and BMI and Echocardiography were recorded for the healthy subjects after recording the genotype ACEDD, ID, II and using 5 players of different activities (fencing, basketball and endurance players). Age, Y (II) 23 ± 12 , DD 24 ± 11 , height, cm (II) 169 ± 7 , DD, 170 ± 2 , ID 171 ± 9 , weight, kg (II) 68 ± 9 , DD 71 ± 10 , ID 70 ± 11 . The results indicated an increased ACE level, U/L in case (ACEDD than ACEID and ACEII, BMI increased in case) ACEDD compared with I/D and II and a slight increase in ACEDD BP compared with ID, II, also the same results in case (HR bump increased slightly in genotype DD than ID, II. EKG (post wall, mm and septum, mm) showed higher values in ACEDD compared with ID and II.

In conclusions ACE genotype is responsible for ACE levels in our subjects and ACE DD exerts an influence on cardiac port wall thick men and septum together with blood pressure and HR. So ACE gene may exert an influence on cardiac size though the action of ACE.

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GENETIC, PHYSIOLOGICAL, PSYCHOLOGICAL AND BODY COMPOSITION PROFILE OF AMATEUR TOP LEVEL WRESTLERS

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Wrestlers are very important in all the world. Egypt has excellent wrestlers. There are a lot of specialities specific for top class wrestlers. That help us for limitation some Biological, Physiological, Psychological and body composition profile to make the best selection of young wrestlers and guide them by best technological methods to achieve high level in the championships.

The aim of this study: is to know some biological, physiological, psychological and body composition profile of amateur top level wrestlers, namely body composition (BMI, TBW, FAT% and FAT MASS), liver function (SGOT, SGPT) kidney function (Uric acid, Creatinine), blood picture (Wbc, Hemoglobine, Hematocrite) and prolactin hormone, also ACE genotype was performed/

Research procedure. The researchers used the description approach of one group. The research sample consists of 9 top class Egyptian wrestlers between (21:27) of age, (60:90) of weight, (155:186) of height.

The results indicated:

ACE DD indicating the composition or the white muscle fibers more than red muscle fibers characteristic of the wrestler players.

As for body composition, BMI indicated a higher values ($> 25 \text{ kg/m}^2$), although the fat% and fat mass are within normal values. As for TBW the results indicated lower values than normal which means that wrestlers are in permanent hydration to decrease weight, which leads to rapid fatigue.

As for liver function test of SGOT and SGPT are within normal values, the same is extending to the kidney function test uric acid, creatinine which reveals normal values revealed normal blood picture.

As for prolactin hormone increased indicated psychological variables.

In conclusion wrestlers profile revealed:

1. Muscle fibers are white muscles which are rapid in contraction.
2. Body composition indicated higher BMI values which mean they are subjected to some vascular problems, also decreased TBW indicate that they are in a permanent trial to decrease weight.
3. Liver, kidney, blood picture. Revealed normal values which indicate a sound health.
4. Prolactin hormone increased indicated Psychological variables.

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GENOTYPE, BODY COMPOSITION, FITNESS AND SOME PSYCHOLOGICAL VARIABLES DUE TO SOME HEALTH PROBLEMS OF TOP CLASS EGYPTIAN BOXERS

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Apart of other factors, bodily constitution and psychological variables together with fitness play a determining role in the achievement of top sporting performance. Boxing is one of the violent sports, because it may cause some of health problems for players which is method of doing, while a lot of players use much force for blows at the upper of the body, specially the head part, which causes many problems and health damages, which can be shown in advanced stages of ages which request known at the healthy case of boxers in the trial for disappearance of doing this damages after boxers finishing from practicing box sport forever.

The aim of this study — is to study genotype, body composition, fitness and some psychological variables due to some health problems for top class Egyptian boxers.

Research procedure. The researchers used the description approach of one group. The research sample consists of 6 top class Egyptian boxers between (23:28) of age, (60:80 kg) of weight. Body composition was performed using tanita instrument, hormones prolactin, VMA using gamma counter and spectrophotometer, lactate using Accusport instruments and genotype using PCR.

The results indicated.

Genotype results revealed ACE DD, meaning with muscle fibers, the results indicated that BMI, fat%, fat mass, TBW, FFM and BMR increased in case of extreme weight in comparison to low weight categories boxers. And fitness was higher in low weight boxers (lactate, pulse rate were lower). As for prolactin and VMA the values increased in extreme weight categories boxers than low ones, these results were in accordance with (Coelho et al., 2002 and Jurimae et al., 2002).

According to the results we reached the following conclusions:

1. Low category boxers might be leaner and filter compared to extreme category boxers.
2. Low category boxers might be subjected to lower stresses compared to extreme category boxers.
3. Genotype results was ACE DD indicating more white muscle fibers in boxers.

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CHANGES OF PHYSICAL FITNESS IN YOUNG SHIDOKAN KARATE SPORTSMEN

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Good physical fitness is very significant in striving for sport victories, therefore special attention is paid to the education of physical characteristics in trainings. Shidokan karate is a comparatively new branch of sport (Liaugminas et al., 2003); some research was made in training aspects.

The aim of the research — to determine changes of physical fitness in young shidokan karate sportsmen.

Tasks of the research:

1. To determine the physical fitness of young shidokan karate sportsmen.
2. To find out the weakest physical characteristics of the researched ones.
3. To estimate the effect of this program on the change of physical fitness.

Methods of the research: 1) the analysis of literature sources, 2) testing of physical capacity and 3) statistical analysis (the Student's t meanings).

Organization of the research

The research was carried out in 2003, in the period from September to December. The respondents were 13—14 year old boys (n = 24), who had been sporting shidokan karate for 2—3 years.

The physical fitness test was performed according Eurofit tests (2002) and doing splits (Raslanas, Skernevičius, 1998).

The training program of physical characteristics was made up of physical exercises for developing quickness and agility, standing long jump, power endurance and flexibility. It was prepared according to the main consistent patterns and principles of education of physical characteristics, taking into consideration physiologic consistent patterns of organism (Skurvydas, Gedvilas, 2000).

During the linear pedagogical experiment, which was made up of 50 trainings, a specially prepared program for the least developed physical characteristics was applied. After the exercise of an aerobic format and stretch exercises the researched boys exercised according to the program for 20—30 minutes.

Results of the research

It was estimated that physical fitness of young shidokan karate sportsmen according to Eurofit orientation scale of evaluation is above the average level. The results of doing the splits (right leg in the front and left leg in the front) fit the adequate or high level of evaluation.

In the research time boys' rates of physical fitness, especially the standing long jump and stamina of stomach muscles have improved. The results of doing the splits improved to the perfect level of evaluation.

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CHANGE OF THE JUMP HEIGHT DURING VARIOUS PHYSICAL LOADS AND RECOVERY

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The prevailing complex movement skills of different kinds of sport are jumping and quickness. It is proved that the jumping quality improves not only because of natural growth, but also with the help of special physical exercise (Gemar, 1988; Bobbert, 1990; Viitasalo et al, 1988). According some sources, young organism is able to adapt easily to physical training. However, the ideal structure, intensity and range of the exercise are still not known. As some research has shown, long lasting physical training can cause the change of quick muscle fibers into slow. In this case the muscle contraction can moderate. Besides it is important to decrease the effect of tiredness of quality of jumping. This is topical of the training theory and practice.

The aim of my work was to study the chance of jumping height during various physical exercise and revival.

Material and methods:

The thirty two basketball-players (age 19, 20 and 22 year-old), were observed. The measurements were registered. Vertical jumps made in ways hp 90, 90-dj 90, dj 135 assessed, especially the height. The muscle pain was estimated after 24, 48 and 72 hours.

Used methods: vertical jump test (testing of jumping quality, one at a time jump), analysis of special literature, estimation of leg pain and revival, mathematical statistics.

Results

The results showed that the quality of jumping is not the same. It is interesting that the height depends on the manner of jumping. Example: the height of jump 135 was less ($p < 0.05$) hp 90. Athletes results of jumping has a tendency to decrease because of muscle and nerve tiredness. The height of jumps hp 90 has obviously come down ($p < 0.05$). Moreover, the change of jumping measurements and taking of was noticed while 50 jumps. The tiredness of muscles was accompanied by discomfort which lasted a couple of days. The strongest pain was felt after 24 hours. It was definitely stronger then after 48 and 72 hours exercise.

Conclusions

1. The height of vertical jump depends on the training programme. However it can be modified as other reflexive and muscle mechanisms. Besides, it depends on the kind of jumps, ability to make it and the degree of concentration. The highest vertical jump is in hp 90 way, the lowest is in dj 135.

2. The alternation of basketball players 50 jumps in the maximum intensity is bigger, as compared to the taking off time. The distinct jump height decrease is obviously noticeable while exercising.

3. The tiredness appears jumping in maximum intensity. It is obviously seen because the decrease at jumping rate. The biggest change seen during jumping was in hp 90 way.

4. The jumping statistics after 1 hour after the training had a tendency to improve. The best way of regaining the height is jumping in 90-dj 90 way.

5. Jumping at maximum intensity the vertical basketball jump height decreases. Statistically important relationship ($p < 0.05$) was noticed between the ways of jumping, the heights before the exercise, after the exercise and one hour after the revival.

6. Unusual exercising is accompanied by muscle discomfort that lasts even a couple of days.

THE EFFECT OF DIFFERENT WARM UP STRETCH PROTOCOLS ON 50M — SPRINT PERFORMANCE IN TRAINED SOCCER PLAYERS

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The purpose of this study was to determine the effect of different static and dynamic stretch protocols on 50 m sprint performance. 100 male soccer players were randomly assigned to four groups; (i) passive static stretch (PSS) (n = 25) (ii) active dynamic stretch (ADS) (n = 25), (iii) active static stretch (ASS) (n = 25) and (iv) static dynamic stretch (SDS) (n = 25). All groups performed a standard 10 min. jog warm — up, followed by two 50 m sprints. The 50 m sprints were then repeated after subjects performed different stretch protocols. The PSS and ASS groups had a significant increase in sprint time ($p \leq 0.05$), while the ADS group had a significant decrease in sprint time ($p \leq 0.05$).

It was concluded that static stretching as part of a warm up may decrease short sprint performance, while active dynamic stretching seems to increase 50 m sprints performance.

THE EFFECT OF MASSAGE ON PERFORMANCE OF THE SIT AND REACH TEST IN ADOLESCENT SOCCER PLAYERS

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The purpose of this study was to investigate the effect of a single hamstring massage on the performance of the sit and reach test in adolescent soccer players. 10 male adolescent soccer players with a mean age 15.3 ± 0.5 years, height 172 ± 3.5 cm, body mass 67.5 ± 4.3 kg and 5.0 ± 0.7 years of training participated in this study. Before treatment, each of 10 subjects performed the sit and reach test. Performance of the sit and reach test was repeated after treatment. Mean percentage changes in sit and reach score after treatment were calculated for the massage and no massage treatments, and analyzed using student's *t* test. No significant differences were observed for subjects with relatively height and low values before treatment. These findings suggest that a single massage of the hamstring muscle group was not associated with any significant increase in sit and reach performance immediately after treatment in adolescent soccer players.

SIGNAL TRANSDUCTION SYSTEM IN DIFFERENT TISSUES AND THE EFFECTS OF EXERCISE TRAINING

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Investigations examining roles of cyclic AMP in the functions of different tissues have been comparable in particular in the United States, France, Spain and Ukraine, providing further evidence that information transfer across national boundaries is necessary for the rapid and efficient advancement of Exercise Biochemistry (1, 4, 5). The purpose of this talk is to present data of the effects of acute and chronic exercise on the signal transduction system in different skeletal muscles, liver and adipose tissue. Special attention is given to such components as sarcolemmal GTP-bound proteins, phosphatidylinositols — precursors of the inositol-1,4,5-trisphosphate in myocardium (2, 3). The state of the current knowledge is analyzed regarding β -adrenergic receptors characteristics, cAMP content, adenylyl cyclase (AC), and cAMP-dependent protein kinase activity in skeletal muscle in relation to duration and intensity of exercise and to the adaptation of the system to chronic exercise (4, 5). Adipose tissue extracellular cAMP appearance and metabolism during exercise is addressed. Hepatic G proteins expression and function, and AC specific activity in the liver under the effects of exercise training will be examined as well.

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DETERMINANTS OF HABITUAL PHYSICAL ACTIVITY OF PRE-SERVICE STUDENT TEACHERS IN HONG KONG

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The purpose of this study was to identify the habitual physical activity level and examines the health attitudinal factors correlates of habitual physical activity of student teachers in Hong Kong. More specifically, attitude was employed to assess its utility for predicting habitual physical activity levels. A model suggested by Williams (1996) explains the development of a set of behaviours involving a sequence of acquisition of knowledge, formation of an attitude or set of values, and development of a particular behaviour so as to establish a habitual physical activity. Hence, the development of their attitude towards a healthy lifestyle will be important during their initial teacher training to influence students' attitude towards a healthy, active living, as shown by the Social Cognitive Theory (Bandura, 1986), which suggests that a teacher's attitude and behaviour can affect a student's attitude and behaviour through modelling. Cardinal (1995) clarifies that modelling is affected by the salience and complexity of a given activity, and the credibility and relevance of the model. As teachers are typically regarded as highly relevant and credible models for children (Cohen, 1980), they can profoundly affect children's attitudes and behaviours both consciously and unconsciously.

Anthropometric measurements (body height and weight) were obtained and a modified Habitual Physical Activity questionnaire and a Health Attitude questionnaire was used to assess the 3 components of habitual physical activity (study, sports and leisure) and the 4 factors of health behavior (Nutrition, Body Composition / Weight Control, Psychosocial/Environmental and Stress) of the students teachers. A total of 82 subjects aged 19—27 years were recruited from the Hong Kong Institute of Education, of whom 44 females and 38 males students with 23 female and 20 male students who were studying Physical Education.

The Habitual Physical Activity results not only showed significant differences between male and female ($F = 14.93$, $p < .01$) but also between PE and nonPE students ($F = 125.01$, $p < .05$). After investigating the relationship between the variables, it can be seen that health behavior was correlated with habitual physical activity levels ($r = 0.743$, $p < 0.01$). The four components of health attitudinal factors could significantly predict habitual physical activity levels of the student teachers. Multiple stepwise regression analyses support the findings from the correlation which reflected health behavior is probably an important predictor of habitual physical activity. The result was also explained by applying planned behavior theory (TBP) (Ajzen, 1985). The initiation and maintenance of habitual physical activity level in student teachers depends on multitude of biological and socio-cultural variables that demand attention across the lifespan.

The results of this study reflect that the health promoting exercise could be focusing on multifaceted lifestyle factors rather than simple exercise class as a means of enhancing student teachers' health. It would be used for exploring the strategies in promoting health and wellness in the Hong Kong Institute of Education.

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THE EFFECT OF CONTINUOUSLY INCREASED TRAINING LOAD ON MUSCLE DAMAGE

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Introduction. The well documented symptoms of muscle damage include prolonged impairment of muscle function measured during both voluntary and electrically stimulated contractions, protein leakage from the injured muscle fibres, and delayed-onset muscle soreness (Friden and Lieber, 2001). Number of eccentric contraction, length of the stretch and magnitude of the force developed during the stretch are main factors which determine the size of damage extent (Allen, 2001). It has been noticed that after repeated bout of the same exercise the symptoms of muscle damage are not so markedly expressed and this phenomenon is called repeated bout effect (RBE) (Nosaka and Clarkson, 1995). However, the effect of not one or two, but 8—10 trainings with constant increase of magnitude of the stretch force, and length of the stretch and eccentric contraction number on muscle damage is not clear.

Our goal was to establish the effect of continuously increased training load on indirect muscle damage symptoms.

The methodics. Non-athletes adults, performed nine trainings (drop jumps with immediate maximal rebound) for three weeks with continuously increased training load. The height of the platform increased from 30 to 90 cm in the first three training session. Then the number of jumps increased from 50 to 100 in the following three training session and squat angle decreased from 135° to 70° (stretch amplitude increased) through the knee in the last three trainings. The isometric maximal voluntary contraction force and by 15 (P15), 50 (P50) Hz frequency stimulation induced quadriceps muscle contraction force at angle of 60° on isokinetic Biodex II dynamometer, jump height on Kistler platform, creatine kinase (CK) activity and muscle soreness were measured in 48 hours after each training. The ratio of P15/P50 was calculated for evaluation of low frequency fatigue (LFF).

Results. There was a significantly greater decrease in contraction force when the muscle was being stimulated at lower than at higher frequencies ($p < 0.05$). The LFF was more markedly expressed after the 7th, 8th and 9th trainings ($p < 0.05$). Besides, LFF disappeared in 48 hours after the 3th, 4th, 5th and 6th, but not after the 7th, 8th and 9th trainings at the same time. At 48 hours after first training a considerable increase in CK activity in the blood plasma were registered ($p < 0.05$). There were no significant changes in CK activity after other trainings until the 7th training CK increased again ($p < 0.05$) and after the 8th remained greater than in its usual state ($p < 0.05$). The soreness was felt by the subjects 48 hours after the 1th, 7th, 8th and 9th trainings.

Discussion. Our study showed that prolonged exposure to eccentric-concentric exercise reduces the signs and symptoms of muscle damage even if force developed during the stretch or the number of contraction, continuously increases. It was confirmed that the length of the muscle during eccentric contraction appears to be a critical factor in determining the extent of damage: drop jumps with greater amplitude of muscle stretch induced greater muscle damage. Also, the previous training load with minimal muscle stretch amplitude did not provide protection against damage from the training load at greater muscle length.

Conclusions. The continuously increased muscle stretch force and number of stretches during three weeks of training reduces the symptoms of muscle damage and finally leads to their disappearance. However prolonged exposure to eccentric-concentric exercise does not protect from damage if the subsequent trainings are performed at greater muscle length.

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CHARACTERISTIC OF TRAINING OF YOUNG LITHUANIAN SKIERS FOR EUROPEAN YOUTH OLIMPIC WINTER FESTIVAL

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Training for high mastership skiers continues for 10—15 years. It is necessary effective training program of many years for cross country skiers. Purposeful young skiers physical features, biological functions, motive abilities training in response to adaptation peculiarity of genotypic constitution, the best periods for development of physical features is very important.

Researches in many other foreign countries researched sports selection, methods of elementary preparation, controlling preparation of young skiers (Климанов, 1981; Трефилова, 1981; Волков, 1986; Платонов, Сахновский, 1988; Бутулов, 1990; Кузьменко, 1991; Clifford, 1992; Rusko, 1992; Matsin ir kt., 1997; Fomin, 2000). Though training of young 15—16 years skiers is not enough researched in Lithuania. It is important to research how young skiers should be trained in Lithuania, where are specific social, climatic conditions.

The aim of our work was to analyze training peculiarities for European Youth Olympic Winter Festival, to ascertain changing of physical powers of Lithuanian youth skiers during one year training period.

Trying to achieve the aim, we analyzed adaptation with physical load during one year training period of young skiers. We analyzed sportsmen training documents, sportsmen diaries, tests that have been taken in VPU Sports science institute laboratory. Extended examinations were performed 4 times a year in Vilnius pedagogical Sport science institute's laboratory. Sportsmen took tests for sportsmen endurance according to test programs. Performed work loads of Lithuanian young ski racers compared with model of characteristic for the same year skiers (Čepulėnas, 2001). Six 15—16 years skiers of Lithuanian youth combined team — three girls, three boys — took part in our researches.

Cyclist work loads performed during yearly training cycle shows that girls performed load accordingly to represent in model of characteristic. Cyclist work loads performed during yearly training cycle reached 3760—4800 km. Load performed of skiers girls was too little intensity. Instead of I intensity zone load 350 km which is recommended their load reaches 1500 km. Though load of III-IV intensity zones was too little. Cyclist work load performed of skiers boys during yearly training cycle exceeded indicated in model of characteristic. Skiers M. B. and E. M. training load during yearly cycle was 5920 km. It is 1100 km more than indicated in model of characteristic. Load performed of skiers' boys was too little intensity. They performed too much load of I intensity zone and very little load of III—IV intensity zones.

Laboratory tests showed that functional abilities varied during year. At the stage of the competitory cycle beginning physical and functional abilities of skiers were at a medium level. Among skiers girls M. B. had the best functional capacity. Functional abilities indexes of skier L. K. were slightly lesser. The worst indexes had skier S. S. Among skiers boys D. M. was the most powered, though indexes of functional abilities reached for skiers E. M. and M. B. were a little behind.

In the main competitions of the season — European youth winter festival all skiers won places in third, fourth tenths. Sportsmen are lacking of speed trainings, races. Too little experience taking part in international races.

PECULIARITIES OF PROFESSIONAL IDENTIFICATION OF WOULD-BE SPECIALISTS OF PHYSICAL EDUCATION AND SPORTS AT THE INSTITUTION OF HIGHER EDUCATION

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Students choose their higher school mostly because of the speciality they want to acquire. Higher schools perform a very important role forming students' early professional identity. Research indicates that the success of the first steps in a new job depends on the congruence between students' professional expectations and the professional reality in the work place. Thus higher schools are responsible for the students' professional identity to be adequate.

The *aim* of the research was to reveal the peculiarities of the professional identification of would-be specialists of physical education and sports at the institution of higher education.

The empirical research involved the *triangulation of qualitative and quantitative methods*. The questionnaire was used to determine the general tendencies of the research participants' professional identification, and the interview was meant to establish its content and specific features.

Organization of the research. The sample in the quantitative research consisted of 622 (366 boys and 256 girls) I—IVth year students of the Faculties of Sports Education and Sports Technologies and Tourism at the Lithuanian Academy of Physical Education. The interview participants were 54 students of the same Faculties. Statistical data analysis was performed using the package *SPSS 11.0 for Windows*.

Research results. Despite the sports aspirations and sporting activity of the research participants they are prepared for the work of educators — physical education teachers and sports coaches. The factor analysis of Professional Identification Scale let us distinguish two factors with the eigenvalues of 1.0 or better. The first factor, the loading of which was 0.67, was unified by the positive attitude towards the future profession. It was characteristic of 50.2 per cent of the research participants. The second factor (0.73) indicated less favorable attitudes towards the future profession (17.5 per cent of the research participants). The qualitative data showed the ambiguity of students' evaluations of their future profession, and they confirmed the importance of the role of the social context.

Summary. The aim of the research was to reveal the peculiarities of the professional identification of would-be specialists of physical education and sports at the institution of higher education. The empirical research involved the triangulation of qualitative and quantitative methods. Students' professional identification revealed their professional aims, interests, aspirations, the perception of their professional qualities, connected with the prestige of the profession in the society, students' professional preparation at the academy and the peculiarities of the future profession. It revealed how students were prepared to identify themselves with their future speciality.

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COMPARATIVE ANALYSIS OF TEAM PERFORMANCE INDICES DURING BALTIC BASKETBALL LEAGUE (BBL) COMPETITIONS

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Extensive research has been dedicated to define and measure group and team performance across numerous domains. The performance of teams relies not only on the individual team members' individual abilities, but also on the various components that make up teamwork, also it is a concept that is thought to explain an important component of effective team performance (Weisman, 2005).

Research objective — to establish and evaluate several indices of team performance of elite basketball players.

Research methods:

1. Analysis of literature sources. 2. Pedagogical observation. 3. Mathematical statistics.

Research organization: Team performance of elite basketball players has been observed during BBL (Baltic Basketball League) 2004/2006 season competitions (n = 472).

Research results and discussion:

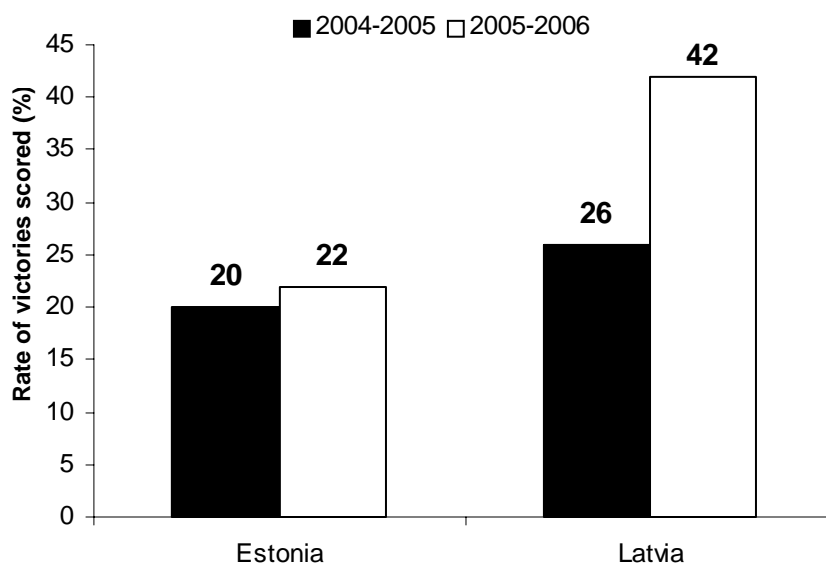


Fig. 1 Rate of Estonian and Latvian basketball team wins scored against Lithuanian basketball teams

When analyzing team performance of elite basketball players during BBL 2004/2005 season competitions, we maintain that Latvian teams have scored more victories against Lithuanian teams (26%) than Estonian (20%).

After the 2005/2006 season, we witness a considerable increase in the rate of victories scored (42%) by Latvian teams against Lithuanian teams. The same rate of victories scored by Estonian teams after the 2005/2006 season has increased by 2%.

Conclusion:

During the Baltic Basketball League 2004/2006 seasons, Latvian teams have improved their rate of victories scored against Lithuanian teams more markedly than Estonian teams.

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COMMUNICATIVE COMPETENCE OF WOULD-BE SPECIALISTS OF PHYSICAL EDUCATION AND SPORTS IN THE ASPECTS OF THEIR PROFESSIONAL ROLE

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Substantiation of the research problem. What helps and what interferes with mutual meanings in the lessons of physical education? The answer to the question implies that teachers, as well as other professionals, perform a certain social role in the society. Their utterances can encourage or discourage their students' efforts to reach aims and take responsibility for their actions without giving up autonomy. Besides, each utterance in a specific situation not only diverts associates' thinking in a certain direction but also shows what meanings the speakers impart to the same observable (or perceptible in other ways) object. Thus, speaking conveys value attitudes of both teachers and learners.

The role of context, especially culture as the widest context, emerges. It means that communication processes occur and gain certain meanings in specific contexts: the meaning of the same conversation can differ depending on the communication conditions (where, when, with whom and under what circumstances communication takes place) and the relations of speakers (what social roles they perform).

Organization of the research. The research participants were 89 second year students of the Faculties of Sports Education at the Lithuanian Academy of Physical Education (47 boys and 42 girls). Their age average was 20.0 ± 0.1 . The same students were surveyed repeatedly in the fourth year (2005—2006 school year).

The communicative competence of would-be specialists of physical education and sports was investigated using a special questionnaire which consisted of the question blocks of fact (social demographic) and construct (research object). The social demographic variables were the age, gender, and year of studies of the research participants, and the construct block was made of three scales of statements and separate questions. The students filled up the questionnaires in the presence of one of the researchers. The questionnaires were collected immediately after they had been filled up. The students were given enough time to answer the questions (approximately 30 minutes). Statistical analysis was performed using the SPSS Package for data accumulation and analysis. The difference between the compared groups was estimated using the indicator of statistical significance p , which was considered significant if not less than 95 per cent.

Research results. The research results revealed the attitude of the research participants towards their native (Lithuanian) language, the grades they had for the knowledge and skills of Lithuanian, they ways they improved their native language during the last three years, their reaction when other people corrected their mistakes, their knowledge of the List of the Greatest Language Mistakes prepared by the State Lithuanian Language Commission, and the books and dictionaries of the native language they had at home. Besides they were asked if they would like to attend a free four-hour course on the native language and they were told to evaluate their knowledge of the native language on a ten-point scale. The first semantic differential scale indicated how the research participants evaluated their speech, the second one revealed their behavior in the educational interaction, and the third scale enabled the researchers to interpret the research participants' attitude towards the use of their native language in physical education activities.

Summary. Research results let us claim that teacher's qualification is not enough, especially when it emphasizes not the knowledge and skills acquired in the years of studies but their formal evaluation indicated by a certain document (e.g. diploma). A teacher needs specific competencies, i.e. specific skills, e.g. projecting and implementing teaching/ learning, self-education. Thus, university study programs should emphasize the importance of one of the components of teachers' self-education competence, i.e. communicative abilities, especially language competence.

THE INFLUENCE OF DIFFERENT RELATIONSHIPS OF DIRECTIVITY AND VOLUME OF PHYSICAL LOAD ON THE FUNCTIONAL INDICES OF THE CHILDREN OF 5—6 YEARS

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Introduction

The purpose of this investigation was the study of the influence of the physical loads of different volume and directivity on a change in the separate indices, which reflect the functioning of cardiovascular system.

Methods

The study was conducted on the base of the children's pre-school establishments №72 and № 77 of Grodno. There were participated the children of the elder group of kindergarten in a quantity of 75 people, organized into four experimental and one control group. The physical loads, proposed to children in experimental groups (EG), realized within the framework of physical culture occupations and bore the training nature (70—80% of individual pulse maximum). Data of load were equalized in the average intensity, but were distinguished by the directivity (isolated in accordance with the mechanisms of power supply with aerobic and anaerobic) and weekly volume 36 and 90 minutes (2 and 5 single occupations in the weekly cycle). In the control group (CG) the occupations were matched with the standard program on the physical training without the specially chosen directivity. The following indices, which reflect the activity of the cardiovascular system of the children, were recorded: FHC, IS, SP, DP, AAP, DW. There were determined the index of the stress (IS), the frequency of the heart contractions (FHC), systolic (SP) and diastolic pressure (DP). There was calculated the amplitude of arterial pressure (AAP), and also “dual work” (DW).

Results and Discussion

The analysis of results obtained in the course of a study made it possible to establish that the most considerable decrease of values IS, FHC and DW was revealed in subjects, systematically occupying by the physical loads of predominantly aerobic directivity with a volume of 90 and 36 minutes in the weekly cycle. In the groups of subjects using other combinations of the parameters of load the shifts of indices IS and FHC did not reach statistically reliable ($p < 0.05$) values. Between-group analysis showed that the children used as the training loads physical exercises of predominantly aerobic directivity with a weekly volume of 90 minutes were characterized statistically reliably ($p < 0.05$) did not change both into EG and in CG. The values of data of indices was within the limits of the standards in all groups of subjects dependent on age.

Conclusion

Thus, on the basis of the produced analysis it is possible to establish that the effect of the influence of systematic physical loads on the indices of the functioning of the cardiovascular system of the children of elder pre-school age depends both on the directivity and on the weekly volume of the presented physical loads. The combination of the physical exercises of predominantly aerobic nature with the volume of the training loads of 90 minutes in the weekly cycle proved to be most favorable from the point of view of the optimization of the activity of the cardiovascular system of the children of elder pre-school age. The training effect of the physical loads of smaller volume proved to be considerably below. An increase in the volume of the loads of anaerobic directivity within the framework of the range indicated substantially it did not influence a change in the indices of the functioning of the cardiovascular system of elder preschoolers. This circumstance will be coordinated with the existing ideas about comparatively the higher health-improvement effectiveness of the application of the loads of aerobic directivity in comparison with the use of loads of anaerobic nature.

INSTILLING A POSITIVE ATTITUDE TOWARD PHYSICAL EDUCATION AMONG STUDENTS IN THE FOURTH FORM

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Physical activity is one of the main preconditions for the physical, social and emotional well-being of the individual and the most important factor in boosting health. Yet epidemiological studies show that the physical activity of students is declining, especially noted in the fifth form (Batutis, Kardelis, 2002). This means it is important that a fourth form student, upon entering the main phase of school life, already should have acquired a positive attitude regarding physical education as an important factor in a healthy lifestyle; that he be prepared for and sufficiently resistant to the problems of adolescence; that he have information about health and how to fortify it and that he consider health promotion and preservation a priority in his personal system of values. All of this should become second nature to the pupil, inculcating a positive attitude toward health education among students and generating a conscious motivation for physical activity.

Goal of the study: to determine the specific features of positive student attitudes toward physical education in the fourth form and to assess possibilities for stimulating such attitudes.

Methods of the study: pedagogical experiment, questionnaire survey, self-registration of physical activities on cards, statistical analysis.

Organization of the study. The pedagogical experiment was conducted at primary schools in the city of Klaipėda. A group of 52 students comprised the study sample. In the experimental group (E), our experimental program for instilling a positive attitude regarding physical education among fourth form students was used. A positive attitude toward physical education was not encouraged exclusively during physical education lessons, but through other forms of activities as well. We investigated student attitudes toward physical education, motivation for physical activities, changes in physical activity and knowledge of physical education and health.

Discussion of results. The results of the study showed that a positive attitude toward physical education is instilled by teaching students to observe and register their own physical activity, providing them knowledge about physical education and health, emphasising a positive experience, providing preconditions for physical activity and using more varied forms of activity than occur during regular lessons (discussions, conversation, creative assignments, sport entertainment, excursions and field trips). According to the study data, a positive attitude toward physical education depends on the attitude of parents and pedagogues; physical activities they perform together with children and the emotional context of these activities; the way pedagogues in the primary forms relate interpersonally and the psychological environment in the classroom. This has been noted by other investigators as well (Levickienė, 1996; Kardelis, Batutis, 2002). The role of the class teacher as one of the significant figures encouraging students to play sports increased after the experiment in the E group ($p < 0.05$). Student attitudes toward independent sport activities, the need for morning callisthenics and choice of free-time physical activities also changed. Results of the experiment showed that our program for instilling a positive attitude toward physical education among fourth form students stimulated physical activity by students in their free time. It was determined that by teaching students to consciously understand the motivation for their activity, an interest level was generated, characterized by positive emotions and the conscious desire to re-experience the same positive emotions. This is reiterated in studies by O. Batutis (2002), L. Tubelis (2001). Knowledge of physical education and health increased 58.3% during the period of the experiment among the E group, while in the control group it increased 31.11% ($p < 0.05$). Pupils in the E group better knew physical features and how to exercise them, and what forms of physical activity are possible for children. Study data also showed that many students are not interested in healthy lifestyle issues and that the role played

by parents in providing students information about health is too small.

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THE PRECONDITIONS FOR SPORT PARTICIPATION OF PHYSICALLY DISABLED IN THE CONTEXT OF INTERNATIONAL CLASSIFICATION OF FUNCTIONING AND DISABILITY (ICF)

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Background: The research was devoted for solving of one of the main disability sport problems—low participation of disabled persons in sport activities especially who have severe damaged motor functions.

Aim and goals were to investigate positive preconditions and barriers for participation in sport activities of severe physically disabled analyzing the influence of the level of the impairment of motor functions, environmental and psychological factors of the disabled.

Methods and organization: For investigation of biosocial functions of self — care and daily living activities we used the modified Kenny test. The original questionnaire was created according to the methodological recommendations of ICF for determination of environmental physical, economical and information factors, psychosocial factors as well as psychological attitudes toward their own health and sport participation of disabled. Data of investigation were processed with mathematical statistics. The research was performed individually.

Results: The results of the study show that the age, family status, impaired motor functions and economical factors of disabled individuals have not real impact on disability sport participation. The level of education, integrated education, the adaptation of individual transport and living conditions of disabled as well as the higher level of information played the positive role and could be considered as preconditions for disabled to participate in sport activities.

Inadequate to the real level of severity of motor impairment more negative psychological self — evaluation of the own health, associated with the higher level of self request of medical care, psychological sensitivity of disabled towards the behavior, help and emotions (feelings) of other people were considered as the barriers for sport participation.

The model of preconditions and barriers of disability sport participation was created according to the results of the study.

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CARDIOVASCULAR REACTIVITY IN CHILDREN TO PSYCHOLOGICAL STRESS AS A FUNCTION OF PHYSICAL FITNESS LEVEL

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Introduction

The aim of the investigation is to study reactivity of cardiovascular system (RCS) in children with different physical fitness level (PFL) in conditions of psychological stress (PS).

Methods

There were investigated children 5—14 years old ($n = 415$) who are characterized by normal level of trait anxiety and high activity of achievement motivation. PS was simulated on the base of using letter-proof tables. The investigation was led on 3 rates: baseline period; autospeed; maximum speed of work in the presence of «threat of punishment».

There was recorded heart rate (HR), systolic (SBP) and diastolic blood pressure (DBR), was calculated «double product» (DP) and «index of stress» (IS). According to the results of the task, was counted the volume of work (VW) and the factor of efficiency (FE).

Estimate of PFL includes $VO_2\max$; PWC170, time of load 18 kpm/kg/min, index of aerobic source, intensiveness of loads — 900, 240, 40 sec, 6 min running. There were compared examinees of one age ($n > 80$) with high, more than average, average, less than average and low PFL.

Results and Discussion

It's established that RCS in children 5—14 years in conditions of PS reduces and the speed of rehabilitation increases as improves PFL. In examined aged diapason essential differences ($p < 0.05—0.001$) in groups with high and low PFL were displayed on the rate of autospeed (HR, DP, FE, VW, FE/HR, FE/IS, FE/DP). In the process of realization the task there were established with maximum speed less clear differences. This evidently is connected with ceiling effect owing to reaching the maximum level of arousal. As a whole, with increasing PFL is observed reducing of RCS to PS and the growth of activity efficiency.

INTENSITY OF OCCUPATIONS BY PHYSICAL EXERCISES AND PSYCHOPHYSIOLOGICAL CHANGES OF FS IN THE ADOLESCENTS WITH THE STRESSED INFORMATION LOAD

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Introduction

At present there are no recommendations relative to the optimum intensity of the programs of occupations by the physical exercises (PE) utilized for an improvement in the functional state (FS) of children and adolescents under the conditions of mental tension. The purpose of the present investigation was the study of the PE influence of different intensity on the psychophysiological FS changes in the conditions of the stressed information load.

Methods

In the study there were compared changes of FS in the adolescents of 13—14 years (II and III stage of sexual ripening) under the effect of the systematic PE occupations of low (40—50% of FHC reserve) and high (60—80% of FHC reserve) intensity. There were analyzed the data, obtained with the participation of 6 experimental groups ($n = 91$), two of which used loads of low and four groups — high intensities. The groups with the high intensity of load used PE predominantly aerobic and anaerobic directivity. The duration of the experimental part of the occupation was 20 minutes. Occupations passed 3 and 6 times a week in the course of 10 months. Study of FS was accomplished in the state of rest and with the information load in the regime of auto-rate and maximum tempo of activity. There were determined the frequency of the heart contractions (FHC), mode (Mo), amplitude of mode (AMo), variation spread (VS), index of the stress (IS), systolic (SP) and diastolic (DP) pressure of the blood, dual work (DW), vegetative index of Kerdo (VIK). There were calculated the volume of work (A), coefficient of performance (Q) and measures of the effectiveness of the activity: Q/FHC , Q/IS , Q/DW , A/FHC , A/IS , A/DW .

Results and Discussion

Under the effect of the programs of the occupations of high intensity in comparison with the use of sets PE of low intensity there occurred substantial changes in the studied indices both in the state of rest and with the stressed information load. Adolescents, who use PE of high intensity 3 and 6 time a week, exceeded schoolboys, who carried out with the same periodicity of the exercise of low intensity. With an increase in the multiplicity of occupations positive changes FS increased. Aerobic PE to the larger degree than anaerobic, contributed to improvement of FS in the state of rest and with the fulfillment of information load at the individually optimum rate. To the changes of FS in the implementation of intellectual activity with the maximum speed, the programs of the occupations of the high intensity of aerobic and anaerobic directivity exerted similar influence. At the same time with 3 occupations a week the positive effect of aerobic PE was stronger, and with 6 — somewhat more effective proved to be the complexes, in which predominated PE of the mixed and anaerobic directivity. Impression is created, that the directivity of load against the background of identical periodicity, duration and intensity of occupation to the insignificant degree only determines the specific character of lasting adaptive changes FS of the adolescents of 13-14 years in the conditions of the stressed intellectual activity. Obtained by us data as a whole will agree with the results of other works, dedicated to the study of the influence of occupations PE on the psychophysiological changes of FS in the conditions of weak mental stress [3, 2, 1].

Conclusion

Thus, under the effect of the experimental programs of the occupations of high intensity there occurred a decrease in the level of unspecific activation of CNS in the state of rest and psychophysiological reactivity with the mental work of different degree of complexity, they grew speed and the quality of the intellectual activity, carried out under the conditions of mental

tension, was reduced its psychophysiological price.

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DOES MOVEMENT LEARNING CHANGES THE DEPENDENCE OF POTENTIATION ON JUMPING ACCURACY?

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Research objective — identify potentiation influence learning jump accuracy.

Research methods and organization. 1. Identify jump high 2 Identify maximum legs muscular power. 3. Legs muscular potentiation.

12 positively not practice males was research (age — $20,3 \pm 0,71$ year, height — $1,82 \pm 3,46$ m weight — $77,5 \pm 9,07$ kg and maximum power of legs — $111,9 \pm 31,73$ kg). Searching people 10 min. before strain did warm-up. After that was adjusting maximum power of legs muscular. Before and 1 min. after potentiation (hunkers up to 90 degrees angle over knees, muscular two times following 10 sec. every 30 sec. rest isometric develop 70% power over maximum legs muscular power) did 20 jumps every 5 sec. witch high reach 30% from the maximum jump high.

Searching people did jumps without backward relation, i.e. searching people didn't know about theirs high jumps results.

The same searching people all month every over day was training, performing 100 jumps 30% form the maximum jump high. All research with potentiation strain (PS) was repeated after one month training.

Results and review

Research results show, that the training improve moves accuracy. Before PS 30% from the maximum jump high without backward relation research results show, that before training searching people perform inaccurate jumps, results scatter was bigger (1.25 ± 0.56 cm), meanwhile after training deflection from the jump high and scatter was lower — 0.32 ± 0.46 cm ($p < 0.05$). Besides we identified, that before training, and after it potentiation doesn't make any point to the moves accuracy. However compare potentiation value before and after training, we find statistic sure difference (respectively before and after PS 1.29 ± 0.89 cm and -0.95 ± 0.65 cm, $p < 0.05$) (see table).

Table. Average values (and standard deflection) of twenty jumps before and after potentiation

Rate	Before potentiation		After potentiation	
	Before training	After training	Before training	After training
Deflection from the jump high	1.25 ± 0.56	0.32 ± 0.46 *	1.29 ± 0.89	-0.95 ± 0.65 *

Note. Deflection from the jump high — 30 % from maximum jump high

- searching people jumped less than had to;

+ searching people jumped more than had to;

* statistic sure difference between results before and after training.

Conclusion

Learning moves change jump accuracy dependence from potentiation.

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POTENTIATION INFLUENCE HIGH JUMP

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Research objective — identify potentiation influence of high jump.

Research methods and organization. 1. Identify jump high 2 Identify maximum legs muscular power. 3. Legs muscular potentiation.

12 positively not practice males was research (age — 20.3 ± 0.71 year, height — 1.82 ± 3.46 m weight — 77.5 ± 9.07 kg and maximum power of legs — 111.9 ± 31.73 kg). Searching people 10 min. before strain did warm-up. After that was adjusting maximum power of legs muscular. Before and 1 min. after potentiation (hunkers up to 90 degrees angle over knees, muscular two times following 10 sec. every 30 sec. rest isometric develop 70% power over maximum legs muscular power) did 20 jumps every 5 sec. witch high reach 30% from the maximum jump high.

Searching people did jumps without backward relation, i.e. searching people didn't know about theirs high jumps results.

Results and review

Research results show, that potentiation strain (PS) doesn't make any static importantly influence to jump high (respectively before and after PS 38.32 ± 5.13 cm and 39.95 ± 5.68 cm, $p > 0.05$). Also we identified, that before and after PS, deflection from proper jump high static impotently didn't change (respectively before and after PS — 1.25 ± 0.56 cm and 1.29 ± 0.89 cm, $p > 0.05$). Our material confirm some of others authors receive facts. Hamada and others (2000) authors maintain that bigger value after muscular potentiation reach athletes. Triatlonininku and long distance runners muscular more potentiating than not exercising people. Individually sports members is more susceptible muscular potentiation than not exercising people.

Conclusion

Muscular potentition unconverted neither high jump, neither jump perform nicety

References

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THE EFFECT OF PLYOMETRICS, WEIGHT TRAINING AND THEIR COMBINATION ON VERTICAL JUMPING PERFORMANCE AND LEG STRENGTH

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Introduction

The purpose of this study was to examine which training method had the best influence upon the improvement of vertical jump performance among plyometrics training, weight training, and the combination of the two, by comparing among these three training groups.

Method

Twenty eight high school students were randomly assigned to one of four: plyometrics training (n = 7), weight training (n = 7), plyometrics plus weight training (n = 7), and control group (n = 7).

Mean and standard deviation are calculated for the results of measurement from the four groups, and paired sample test and one-way ANOVA are carried out to examine the significance of difference between changes in vertical jump performance and leg muscular strength.

Results

Results showed that all training treatments elicited significant improvement in all tested variables. Plyometrics training, weight training and combination training were equally effective in vertical jumping performance and not significant difference.

Weight training and combination training were equally effective in squat performance and not statistically significant difference but combination training was significantly more effective than plyometrics training in squat performance after 6 weeks and 12 weeks.

Plyometrics training was significantly more effective than weight training in leg press performance after 6 weeks but there was not statistically significant difference after 12 weeks.

Conclusion

Combination training was significantly more effective than plyometric training in leg press performance after 6 weeks and 12 weeks. Combination training also was significantly more effective than weight training in leg press performance after 6 weeks and 12 weeks.

Therefore, plyometric training, weight training and combination training were equally effective in vertical jumping performance and combination training is recommended for sport really on squat and leg press.

PERFECTIONISM IN SPORT. PHILOSOPHICAL ASPECTS

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Introduction

“Perfectionism — the ethical position that the goal of life is to pursue a perfect ideal of character and conduct. The view is held amongst the Stoics, but also in Christian writing, since Jesus requires perfection of those who would follow him. A “counsel of perfection” is the way for attaining the ideal; however, common morality and later Christian writers acknowledged that as well as such counsel we need rules whose application is rather more practical, and obedience to which is more of a duty than self-improvement.” (Oxford Dictionary of Philosophy, 2005, p. 272) A theory of perfectionism was developed by Aristotle and is further discussed in modern philosophy.

It may lead to a demand for a special ethics in sport? Breivik Gunnar says: “This may be advanced in two ways. A) It may be related to the activity itself — the dangerous, the difficult, the extreme aspects of the activity. B) It may be related to the athletes and their life situation — the amount of training, expectations from the public, physical and psychological stress.

Methods. The meta-ethical methods. The topic will be analysed with the proper philosophical “methods” and tools. These include a clear statement of the problem, definition of the main concepts, a presentation of good and relevant examples, a thorough analysis of the possible problem solutions, and some tentative conclusions.

Results

Theoretical and research interest in the personality construct of perfectionism since the 1980s. In the early 1990s, Flett and Hewitt, Canadian psychologist, developed a perfectionism scale that has spurred further thinking about perfectionism and helped make more rigorous research possible. Flett and Hewitt, focused on social, motivational and cognitive factors in perfectionism.

The XXV International Congress of Applied Psychology (2002) analysed the theme *Perfectionism in sport and exercise*. Hall, H.K. says that the results of research suggest that perfectionistic thinking has the potential to undermine the positive effects of promoting physical activity as a means of enhancing health and wellness.

The problems are discussed in relation to a wider social context. It is especially relevant to see whether the development of elite sport has a parallel development in sport science milieu. Do we find the same tendency towards specialization and perfectionism? We also see that modern society fosters a sectorized morality.

There are arguments, like the Kantian, which lead to common moral standards for all people. Ethical demands must be universal in their scope. The perversions of perfection can then be argued to be a tolerable side effect.

Discussion

It is possible to uphold the notion of a morally grounded sport or whether the perfectionism in elite sport leads to problems that need another type of morality or even has reached a stage “beyond good and evil”.

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ISOKINETIC COMPARISON OF SHOULDER JOINT IN POSITION OF SENIOR HIGH SCHOOL BASEBALL PLAYER

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Introduction

The purpose of this study was to analyze senior high school baseball player's shoulder joint muscular power by Cybex 6000.

Methods

Subjects of this study was 24 senior high school baseball player in Korea. The subjects were divided into two groups pitchers was 14 and outfielders 14. The subject's playing career was over 7 years.

Shoulder joint was evaluated in senior high school pitcher. The players are currently playing in their season and their internal/external shoulder rotation data, which was gathered by Cybex 6000 at 60°/sec, was analyzed. Shoulder exercise program is needed to keep stability of young players by limiting pitching numbers and innings rather than allowing a larger number of pitchers.

Results

1. In comparison of pitcher and outfielder for internal/external shoulder rotation strength, outfielder had higher number than pitcher but there was no significant difference in objective shoulder rotation strength and shoulder rotation strength % to the body.

2. Objective external rotation of outfielders was higher than pitchers and differences ($p < .05$). External rotation % to the body of outfielders was higher than the pitchers but did not have significant difference.

Conclusion

For the stability of pitcher for the shoulder joint must be limit number of pitching and inning. Pitcher's posture must be remedy, pitcher's conditioning must be maintain and must be limit number of pitching.

FIT TO SERVE PROJECT

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This paper describes an on-going research, development and improvement project aiming to enhance the operational effectiveness of members of Civil Aid Service in Hong Kong. The Service is an auxiliary organization with 3600 adults volunteers originally established as a wartime-oriented civil defense unit in early fifties. It develops to provide support to regular front-line emergency discipline forces in rescue tasks during typhoon and flooding, crowd management for community activities, fire-prevention patrols in country parks, and search and rescue operations in the mountains over the years. The project starts by launching the “health and physical fitness study” for collecting information concerning members’ health and physical fitness condition through questionnaire technique and physical fitness testing as Phase I. The relationship among concepts of medical, physical and functional fitness, the importance of quality assurance and occupational health and safety were elaborated. Accordingly, worksite health and fitness promotion plan which included the introduction of the 15-minute a day exercise, organization of the health talks and compilation of Service physical fitness testing standard was initiated in Phase II. Upon acquainting members of the Service with knowledge of health, fitness and their operational relationship, the fitness physical standard was put on trial for all members in Phase III. Eventually, the annual physical fitness assessment was mandated and all members of the Service were required to achieve the standard. The project demonstrates how the operational effectiveness of a discipline force may be enhanced through researching, developing and improving the health and fitness conditions of members of the Service. This also serves as one of the important evidence-based mechanisms to ensure its members who are fit, healthy, and capable of rendering quality service to the public at all time.

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DYNAMICS OF ACCURATE PERFORMANCE JUMP

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The aim of the study was to establish the variability of 100-jump (30% height of maximum jump) precisions performance, throughout 9 days.

Methods of investigation. The subjects were healthy people ($n = 8$), not actively engaged in sports (19—21 years of age). They learned 3 weeks (3 times a week) how to perform accurate jumps (30% height of maximum jump) on the jump and running measurer SBM—1. 100 jumps were made in one training (with 5 s rest between series). Subjects were informed about height of every jump. Before every training subjects performed 3 jumps with maximum power to estimate 30% jump height value of maximum jump. Height of the jump was measured by Bosco (1999) methodic.

Results of the study. The results during the research showed that there were no significant differences between all subjects maximum jump height values after 9 training or after each trainings ($p > 0.05$). We had found significant accuracy improvement of jump during second training, compare with first training (Figure). First 25 jumps of each training are performed with less accuracy than further jumps ($p > 0.01$).

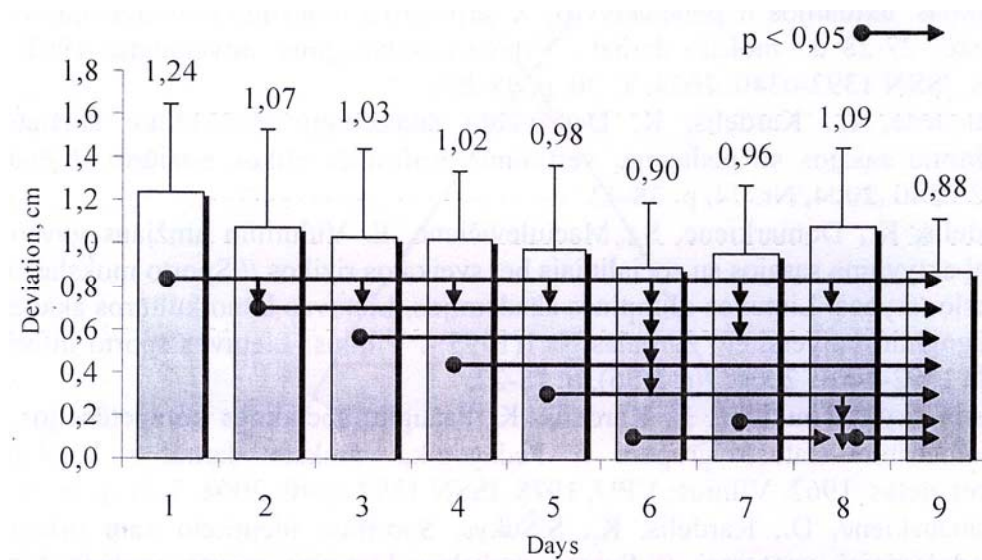


Figure. Subjects 100 jumps height values dynamics deviation (30% height of maximum jump) throughout 9 days. The arrow shows significant differences of deviation values

Conclusion. We conclude that the movement accuracy of jump performance varies not only during training but also with every day.

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**PREGNANT WOMEN'S ATTITUDE TOWARDS PRENATAL BABY EDUCATION IN CONNECTION WITH THEIR PHYSICAL ACTIVITY
(In comparative aspect of Kaunas City and Milan, Rho (Italy))**

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According to Mercer (2001), motherhood of all social roles covers the widest scale of social attitudes, expectations and behavior models and reflects stages of human development — overcoming of passed stages and preparation to successive ones.

Pregnant woman has a power of managing the organized matter — inside she forms physical body for incoming soul and imparts her inside traits. Definitely, it is the most important process of the creation in the world. The creator is created — a human being, who will determine our and the world's fate.

Our topical question is whether psychological-pedagogic and physical nurture of an unborn child is important for women of today's society. As different scientists hold Fanti, Marcone (1993), future relationship with a child starts forming while in womb, therefore the grounds of this relationship are made during pregnancy.

Hypothesis of survey:

Physically active women look more positively to nurture of a baby during prenatal period and their emotional condition is better.

Aim of survey:

To analyze the attitude of pregnant women to prenatal baby education with in connection with their physical activity

The results of this research were compared with the same research done in Milan Rho, Italy.

Object of survey:

Attitude of pregnant women towards a baby during prenatal period.

Several **conclusions** can be carried out after the survey: the higher education, the higher physical activity of a pregnant woman. The less physically active woman was before the pregnancy, the more important for the prenatal nurture appears to be pedagogic knowledge. The survey revealed that the cause of physical inactivity both for Lithuanian and Italian women is poor health and fear to harm their babies. Also it was cleared out that a very important subject in prenatal nurture is considered to be the absence of bad habits both for Lithuanian and Italian women. The bigger fear is to harm a baby by physical activities, the more acceptable is considered to be the style of nurture based on unconditional love to a child.

HUMAN MOTOR SYSTEM ADAPTATION TO HYPERTHERMIA

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Introduction. Hyperthermia is characterized as an increase of body temperature in excess of heat dissipation capacity and is well-established as a limiting factor in exercise performance (Gonzalez-Alonso et al., 1999). There is lack of data showing effect of hyperthermia on body for a longer time.

Purpose. To define how human's motor system adapts to hyperthermia.

Subjects. Healthy, active non-athlete females ($n = 4$; age 20.5 ± 0.9 years, height 171.3 ± 1.3 cm weight 61.5 ± 0.5 kg) gave their informed consent to take part in all experiments within the study. Data of one female will be discussed now and others will be represented in the conference.

Methods. Upon arriving to laboratory subject's skin and rectal temperatures and body weight were measured. Then the subject was heated in the thermal room in bath (water temperature 44 degree) for 45 min and straight after it subject performed isometric work. Isometric work consisted of isometric quadriceps muscle contraction lasting 2 min. with knee joint angle 120° . During this contraction every 15 s quadriceps muscle received d10 Hz stimulus and every 30 s quadriceps muscle was relaxed for 1 s and received d10 Hz stimulus as well. Control testing with exception of heating was applied according to the same protocol before testing human motor system adaptation to hyperthermia. Thermal sensation (10 point system) and thermal comfort (5 point system, according to modified Gagge scale (Gagge et al., 1967)) were interviewed every 5 min. during passive heating and heart rate was measured. Physiological (heat) stress index (PSI) was calculated according to formula:

$$PSI = 5(T_{ret} - T_{re0}) \times (39.5 - T_{re0})^{-1} + (HR_t - HR_0) \times (180 - HR_0)$$
, where T_{re0} , –initial rectal temperature; and HR_0 –initial heart rate; T_{ret} –rectal temperature after heating; HR_t – heart rate after heating (Moran *et al.*, 1998). Research with one subject lasted for 14 days (the same experimental protocol was applied 7 times every other day).

Results. Results shows that passive heating applied 7 times every other day had inconsiderable effect on weight loss, rectal and skin temperature changes comparing results of 1st and 7th testing times: weight loss 0.4 kg and 0.7 kg; rectal temperature raised 2.5°C and 2.3°C; skin temperature 3.4°C and 3.8 °C respectively. MVF fatigue index in muscle without heating was 43.7%, 1st testing time — 60.3% and 7th testing time — 60.4%. Muscle's voluntary activation level performing control load decreased from 91.8% to 74.3%, during 1st testing time from 91.9% to 59.8%, and the 7th testing time from — 97.7% to 68.3%.

Thermal sensation at the 45th min. of passive heating during 1st testing time reached 10 points and during 7th testing time — 9 points. Thermal comfort accordingly reached 5 and 4 points. PSI decreased from 10 to 8 points respectively. Heart rest rate during 1st testing was 86 b/min., at 45th min. after heating reached 154 b/min., during 7th testing time accordingly: 95 b/min. and 141 b/min.

Conclusion. Passive thermal heating applied seven times every other day improved physiological and psychological tolerance to increased temperature. Nervous system resistance to hyperthermia increased. Rectal and skin temperature measures unchanged.

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WILL TRAITS OF BASKETBALL PLAYERS (CADETS)

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In order to reach the highest achievements in sport, strong will is a must. The will of athlete is cultivated during physical, technical, tactical and psychological training (Горбунов, 2001). Cadet age is suitable in particular to develop volitional features in boys and girls that play basketball. When choosing a physical exercise and its dosage for an athlete, a trainer needs to take into consideration the impact of that exercise and its dose on the athlete's will: assigned loads have to be increased gradually and to demand from the athlete the efforts of will though to be surmountable (Williams et al. 2000; Ryska, 2004).

The article analysis which traits of the will are the most characteristic to basketball players (cadets), and what is the difference between the level of will traits among basketball-playing boys and girls. When seeking the set goal, the following tasks have been solved: to reveal will traits of basketball players (boys and girls) by applying the method of self-evaluation; to investigate will traits of basketball players (boys and girls) by applying the method of expert evaluation.

It is presumed that the level of will traits in male basketball players (cadets) is higher than that of basketball-playing girls.

The research employed the following methods: a questionnaire-based survey (modified T. Dembo and S. Rubinstein methods (Елисеев, 1994) to determine the level of expression of volitional features, the method of expert-evaluation to study determination and initiative (Palaima, 1984), and mathematical statistics (χ^2 test).

When applying a random selection procedure in basketball clubs for junior players of Kaunas district, the tested sample of 116 players included boys teams from Kaunas basketball club "Žvaigždžių Tornadas" and basketball teams "Jotvingiai" and "Vidzgiris" (girls) from Alytus sport school. In total, 58 male basketball players aged 15 to 16 and 58 female basketball players aged 15 to 16 have been tested.

Having applied the method of questionnaire-based survey it was established that the distribution of male and female basketball players according to determination and courage differed statistically significantly ($p < 0.01$): boys are more resolved and more courageous than girls. In addition, boys are more purposeful ($p < 0.05$). When investigating will traits of basketball players (boys and girls) by applying the method of expert evaluation, it was proved that male basketball players were more characteristic of determination ($p < 0.01$) than female basketball players. However, when applying the χ^2 test it was established that young male and female players aged 15 to 16 statistically significantly did not differ in regard to initiative ($\chi^2(2) = 0.34$; $p > 0.05$).

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THE EFFECT OF 3 DAY HIGH CARBOHYDRATE DIET WITH HIGH AND LOW GLYCAEMIC INDEX ON FAT OXIDATION DURING SUBMAXIMAL EXERCISE

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It has been reported that carbohydrate rich foods with high GI, consumed prior exercise, may significantly increase blood glucose and insulin levels and by attenuating fat oxidation compromise exercise performance (Thomas et al, 1991 Kirwan et al, 2001). It remains unclear whether CHO foods with high GI are detrimental when prior an athletic event a high-CHO diet is consumed for the duration of several days. Thus, the aim of the present study was to investigate the effect of high carbohydrate diet with high and low GI consumed for the duration of 3 days on metabolic responses and energy substrate utilization during running exercise conducted in the fasting state.

Thirteen healthy, recreationally active men (age, 26 ± 5 years; BMI, $23.4 \pm 2.4 \text{ kg}\cdot\text{m}^{-2}$; body fat, $14.9 \pm 3.5\%$) in counterbalanced order performed three 90 minute treadmill running trials. Trials were separated by at least 14 days and were conducted in the fasted state at a speed corresponding 90% of lactate threshold. In the last minute of every 15-minute exercise stage samples of expired gas and blood were obtained and measurements on heart rate were conducted. One trial was performed after subjects had been consuming their habitual diet (control trial), another after three days on a high CHO low GI diet (LGI trial), and third after three days on high CHO diet with high GI (HGI trial). Diets were isoenergetic and provided 9.5 ± 1.6 , 10.9 ± 0.9 and 10.8 ± 1.0 MJ in control, LGI and HGI trials, respectively. In the habitual diet % of energy obtained from CHO was $47 \pm 5\%$ while in LGI and HGI diets CHO provided approximately 70% of total energy. The GI values were 54 ± 6 , 36 ± 1 , and 76 ± 3 for control, LGI and HGI diet, respectively.

There were no significant differences between trials with respect to plasma insulin and non-esterified fatty acids (NEFA) response. Concentration of plasma glucose was lower (two-factor ANOVA, $P = 0.05$) in the control trial than in LGI and HGI trials but was not different between LGI and HGI trials. Rates of CHO and fat oxidation and the proportion of energy derived from fat (Control, $46.1 \pm 3.4\%$; LGI, $41.0 \pm 4.7\%$; HGI, $45.5 \pm 3.6\%$) and carbohydrate (Control, $53.9 \pm 3.4\%$; LGI, $59.0 \pm 4.6\%$; HGI, $54.5 \pm 3.6\%$) were not significantly different between the three trials. In conclusion, changing from habitual diet to high CHO diet, with either low or high GI for the duration of 3 days facilitates plasma glucose maintenance and at the same time has no detrimental impact on fat oxidation during submaximal exercise conducted in the fasted state.

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DECREASE OF THE EXPRESION OF ATTENTION DEFICIENCY AND HYPERACTIVITY SYNDROME IN PRE-SCHOOLING AGE CHILDREN BY APPLYING THE APA PROGRAM

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ADHD is a neuro-biological disorder which is characterized by the child's levels of attention concentration, absentmindedness and impulsiveness inadequate to the natural development. This is one of the most frequently occurring psychical disorders among children (APA, 1994). In Lithuania, in almost any group of any kindergarten there are one or more impulsive or/and hyperactive children. It has been observed that such children are hard to teach, they do not react the way other children do and frequently disturb work. It is understandable that children with officially recognized attention disorders and hyperactivity (ADH) cause multiple problems to their parents and pedagogues. The available information on ADHD is not sufficient presently. Besides, it is frequently controversial (Sinkevičienė, 1998).

Scientists exploring the area of adapted physical activity face difficulties in planning explorations and analyses dealing with the motoric activity of children with ADHD. There is little information on proper exploration methods usable when analyzing the adapted physical activity of children with attention deficiency and hyperactivity syndrome (Harvey, 2005). That is why this topic has been selected as being urgent in an attempt to decrease the manifestation of ADHD children's manifestation of negative behavioral qualities by applying the selected program of adapted physical activity.

The aim of the research — to identify the expresion of pre-schooling age children's attention deficiency and hyperactivity and its alterations because of the effect of adapted physical activity.

Main tasks: 1. To identify the expresion of attention deficiency and hyperactivity syndrome in different activities (during educational mental activity, physical educational activity and outdoor games) before the experiment according to the assessment of the educators. 2. To explore from the point of view of the educator the alterations of attention deficiency and hyperactivity syndrome qualities during specific activities because of the applied physical activity before and after the experiment. 3. To compare the assessment of attention deficiency and hyperactivity syndrome by educators and parents before and after the applied physical activity program.

Analytical methods: 1. Experiment, 2. Method of observation, 3. Comparative analysis, 4. Statistical analysis of data. The contingent of the explored persons: 10 pre-schooling age children (aged 4 and 5) with attention deficiency and hyperactivity syndrome who are educated at *Vaidilutė* kindergarten-school in Kaunas took part in the experiment, of whom 8 boys and 2 girls.

Main conclusions:

1. According to the assessment of educators, activeness excessively manifested during all activities. 2. According to the assessment of educators, excessive activeness manifested during outdoor games, activeness and attention deficiency manifested equally and were dominating during educational mental activities, excessive activity mostly dominated during physical educational activity. 3. After the experiment, by applying the applied physical activity program, the manifestation of all features of attention deficiency and hyperactivity syndrome decreased. 4. According to the assessment by educators and parents, the manifestation of attention deficiency and hyperactivity syndrome decreased after the experiment.

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BIMODAL RECOVERY OF QUADRICEPS M. FORCE WITHIN 24 H AFTER SPRINT CYCLING FOR 30 S

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Introduction

Changes in muscle force during and after physical activity depend on metabolic fatigue (MF) (Pedersen, 2004), non-metabolic fatigue (NMF) (Rijkelijhuizen et al., 2005) and potentiation (PT) (Fowles & Green, 2003). However, up to now, the coexistence of PT and fatigue in skeletal muscle has been studied mainly after isometric contractions (Fowles & Green, 2003). There have been no studies, to our knowledge, that document PT as well as the coexistence of PT and fatigue following short term maximal dynamic exercise in humans. Therefore, **the main objective** was to investigate the manifestation of PT and fatigue at different muscle lengths during the 24-hours period after a sprint cycling for 30 s.

Methods

Twelve healthy untrained men performed maximal sprint cycling for 30 s and contractility of quadriceps muscle was studied before (Ini), and 2, 5, 30, 60 minutes and 24 hours after exercise. The recovery of the muscle was monitored via the electrically evoked contractions at 1, 15, 50 Hz and maximum voluntary contractions (Pt, P15, P50, and MVC, respectively) at short (knee-joint angle of 135°-SL) and long (knee-joint angle of 90°-LL) muscle length. Full extension = 180°.

Results

The main finding of the present study is a bimodal recovery of muscle force within 24 h after sprint cycling for 30 s: 1) in early, fast-recovery phase (during the first 5 min) muscle force evoked by electrical stimulation was restored at SL, conversely at LL (Ini vs 5 min: P15, P50, all $p < 0.05$); 2) in the second phase (from 5 min to 30–60 min) muscle force decreased at low and high stimulation frequencies and was more expressed at low stimulation frequencies and at SL than that at LL, but the MVC recovered to initial by the 30 minute; 3) long-lasting phase (within 24 hours) where P15 force was still suppressed, $p < 0.05$.

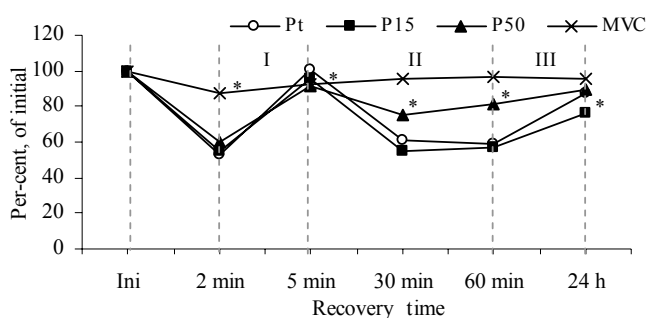


Fig. The time-course of changes in muscle force evoked by electrical stimulation at low Pt, P15 and high P50 stimulation frequencies and MVC at SL after sprint cycling for 30s. Three recovery phases have been observed: 1) fast recovery phase (I) within 5 min after the exercise; 2) secondary force decrease phase (II) from 5 min to 30–60 min (not in the case of MVC) and 3) slow recovery phase (III) within 24 h (Fig.).

* $P < 0.05$; SD are not presented.

Discussion

The main finding of the present study is the bimodal response of the stimulated contractions. Depression of force 2 min after sprint cycling for 30 s is caused by MF and NMF, the former being a major factor. Rapid recovery of contractile properties during the first 5 min is brought about by fading MF and still present traces of the PT, which compensated for the effect of NMF. The subsequent (5 to 30–60 min) decline in low and high frequency stimulation force

is an outcome of diminishing influence of PT on the background of persistent NMF. The main cause of NMF is reduced release of Ca^{2+} .

Conclusion

A bimodal recovery of contractility of the quadriceps is determined by the concomitant complex interaction of mechanisms enhancing and suppressing contractile potential.

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EFFECT OF REPEATED LOAD ON MALE MUSCLE

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Introduction

It has been found that repeating the previous load after several days (or even several weeks) nerve and muscle fatigue diminishes. Executing jumping exercises which last 1 min at a maximum intensity fatigue of both types may occur: metabolic and non-metabolic (Byrne et al., 2004; Morgan, Proske, 2004; Proske, Morgan, 2001). However, it is not clear how the load causing both metabolic and mechanic muscle damage influences RBE.

Aim of the research is to establish what effect two intensive jumping endurance trainings have on nervous and muscle system fatigue and their recovery.

The investigated. The subjects of the research were healthy males who do not actively participate in sports (age 18—22 years; $n = 11$). Their age, height and weight mean values were 21.1 ± 0.4 m, 178.3 ± 2.5 cm, 70.5 ± 6.5 kg respectively.

Methods. The contraction force (P) of *quadriceps femoris*, caused by low (20 Hz) and high (100Hz) stimulation frequency, was established in persons who do not take sports actively ($n = 11$) 3, 10, 60 min before and after the load (every 10 sec 5 series \times 20 jumps at a maximum intensity). The force was found when the knee joint was at the angle of 90 and 135. La concentration in blood was estimated 5 and 30 min after the load. CK intensity in blood was assessed after 24 hours and muscle soreness was evaluated (subjectively). The subjects of the research repeated the same load after 9 days.

Results. The research results proved that during the first and second jump endurance load the vertical jump height decreased significantly ($p < 0.05$, compared to the controlled value; $p > 0.05$ compared to the first and repeated load), and 60 min after the load it equalled to its initial value. After the jumping load La concentration increased significantly ($p < 0.05$) and remained increased 20 min after the load. La concentration in blood did not differ significantly after the first and second load. 24 hours after the first and second load leg muscle soreness was 6.8 ± 0.8 and 4.7 ± 1.1 respectively ($p < 0.05$, compared to the first and the repeated load). CK activity in blood plasma 24 hours after the second load was lower than after the same load at the same time ($p < 0.05$).

After the jumping endurance load (during both trainings) MVF decreased significantly ($p < 0.05$) as well as the force caused by all stimulation frequencies (when muscle is of small and big length, except for the case when the force caused by high stimulation frequency (long muscle) did not change significantly after the load) and it did not recover to its initial level 60 min after the load. There was a significant increase of force caused by MVF and stimulation in 60 min after the first and repeated load did not differ significantly.

Conclusion

Jumping endurance training, which was repeated after 9 days did not change male jumping and male endurance as well as the force caused by leg muscle voluntary low and high stimulation frequency after the load. However, muscle mechanic damage symptoms decreased 24 hours after the load.

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AGE-RELEVANT CHANGE IN PHYSICAL PREPAREDNESS OF PROFESSIONAL MILITARY SERVICE SOLDIERS

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Aim of the research — to evaluate physical preparedness in different age groups of professional military service soldiers of the Lithuanian Army Great Hetman Jonusas Radvila training regiment.

Methods of research: the analysis of literary sources; physical capacity tests and mathematical statistics.

Organisation of research

Research took place in July of 2005. 293 professional military service soldiers of the Lithuanian Army Great Hetman Jonusas Radvila training regiment were examined. The soldiers were divided into five age groups: I — 18—25 years old (n = 143); II — 26—30 years (n = 83); III — 31—35 years (n = 44); IV — 36—39 years (n = 12); V — 40—45 years (n = 12).

The evaluation of soldiers' physical preparedness was based on the results of the three exercises: 1) hand bending and stretch in lying position test; 2) sit and lie down test; 3) 3000 m running. Physical preparedness of soldiers were evaluated in marks based on the results in points: 200—239 points — satisfactory; 240—269 — good; 270—300 — excellent.

The data of the research were processed using Microsoft Excel software package "Statistics", with level of reliability $\alpha = 0,05$.

Results of the research

The best average results of physical preparedness were recorded in the I age group. Therefore professional military service soldiers of this age group perform the best physical condition. Results of physical preparedness get worse as age increases.

Differences in average results of all tests between the age groups I and II are reliable ($p < 0.05$). In comparison with the other age groups, physical preparedness of the soldiers of these two groups is far better.

Evaluation of physical preparedness in different age groups of professional military service soldiers varies depending on age:

Evaluation of the results of the hand bending and stretch in lying position test showed the largest portion of excellent marks in age group III (25.7%); at the same time, the largest portion of satisfactory marks were in group I (3.5%).

Evaluation of the results of the sit and lie down test showed the best marks (excellent) in group I (53.7%), and the worst marks (satisfactory) in group IV (3.1%).

The best results of 3000 m running were performed by soldiers of age group IV (excellent marks — 52.3%), and the worst results were reported in group II (satisfactory marks — 4.1%).

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SHIFT IN PHYSICAL FITNESS OF SOLDIERS OF MILITARY SERVICE OF FIELD FORCE STAFF IN VARIOUS AGE GROUPS

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Aim of the research is to assess physical fitness of soldiers of professional military service of Field Force Staff in various age groups.

Methods of the research: analysis of literature sources; physical fitness tests; mathematical statistics.

Arrangement of the research. Researches were conducted in September 2005. 92 soldiers of professional military service of Field Force Staff participated in the researches; they were divided into 5 age groups as follows: group I — from 18 to 25 years ($n = 16$); group II — from 26 to 30 years ($n = 24$); group III — from 31 to 35 ($n = 21$); group IV — from 36 to 39 ($n = 15$); group V — from 40 to 45 ($n = 16$).

Soldiers' physical fitness was assessed on the basis of results of the following 3 auditorial tests: "Bending and straightening arms from the base in a lying position"; test "Sit and lie"; running a distance of 3000 m. A two-minute limit was set for the first two tests. The results received were assessed on the basis of the amount of points collected in the tests: 200—239 points — satisfactory; 240 — 269 points — good; 270 — 300 points — very good.

Data obtained was processed by Microsoft Excel package "Statistics". Difference reliability in calculations is 99.95%.

Research results. The best results in soldiers' physical fitness are represented in the age group I. Therefore, professional military service soldiers in this age group are most physically fit. As the age limit increases, soldiers' physical conditions tend to deteriorate gradually.

Reliable difference in results between the age groups III—IV and groups IV—V was established by the test "Bending and straightening arms from the base in a lying position" ($p < 0.05$). Rates of the first two age groups were statistically the same ($p > 0.05$).

Results of the test "Sit and lie" were different statistically between the age groups I—II and groups II—III ($p < 0.05$), while the rates in older age groups (IV and V) were the same ($p > 0.05$).

While running a distance of 3000 m, soldiers of the age group I were the best. Results in the age groups II—III and groups III—IV were similar ($p > 0.05$), while results in the age group V were the worst ones.

The best assessment in the first test ("Bending and straightening arms from the base in a lying position") was given to 50.0% of soldiers in the age group I, while the same assessment was given to 36.5% of soldiers in the age group III. 50.0% of soldiers in the age group I were assessed by "very good" in the test "Sit and lie", while in the age group III only 18.1% of soldiers were given the mentioned assessment. Outstanding general stamina rate "very good" was 40.0% in the age group of 36—39 years. The lowest rate of this assessment was in the age group II and it was equal to 14.4%.

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THE EFFECT OF HEALTH SCHOOL PROGRAM ON INJURIES AT SCHOOL FOR STUDENTS AGED 9—12

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Introduction

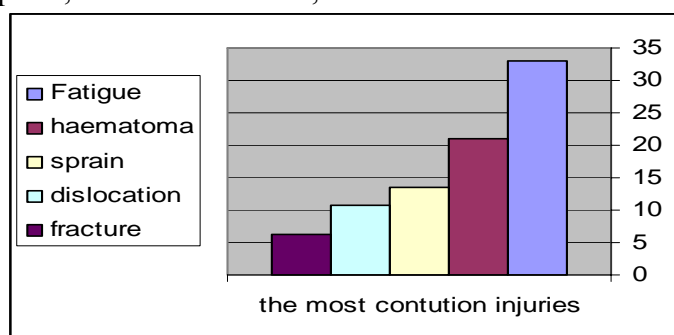
The aim of the study is to know if health school program can effect in school injuries, Determine the most common areas in the body that liable for those injuries and determine the causes of those injuries and act to prevent it.

Methods

The researcher used the description technique, the sample containing students (9—12) as injured are from different types of injury during school physical active. The researcher also used questioning paper to determine number type degree and site of injuries. There is also a paper of give opinion of the physical education teachers about the causes of injuries caused by school physical active. Also there school physical active injury screening from that aim to determine the healthy of the body of the students or examination of this body in suspect ion in injuring questioning paper to determine stress level screening form. This study was applied on 2005 in Kingdom Saudi Arabia

Results

The most important results were contusion injuries were 33% Fatigue, 21% haematoma (capillaries), 13.5% sprain, 10.8% dislocation, 6.3% fracture.



Conclusion

The most important causes of those injuries were Age, physical fitness, body build, physical disorder, type of sport, teaching methods.

Recommended

The study recommended to use warming before start the physical active, when there is any injury students must not join in physical active, and the medical examination to students by the specialist and also treatment as belong to the nature of part of the injury.

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INTERVENTION TO THE PROGRAM OF COMPREHENSIVE HIGH SCHOOL 11TH—12TH GRADE GIRLS PHYSICAL EDUCATION: MODEL OF INTEGRATED PHYSICAL EDUCATION

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Research purpose — to develop a model of integrated physical education programme for 11th—12th grade girls of comprehensive high school.

Research methods and organisation. The research was performed in 2004—2005. The studied sample consisted of 55 teachers of physical education of Lithuanian schools, participators of seminars of the Centre of Continuing education selected by means of non-probability sampling and 59 11th—12th grade schoolgirls of Kaunas High School selected by means of probability sampling. The following research methods were applied: intervention method; polling; testing; mathematical statistics. The study was performed in 4 stages. *Stage I. Situation determination and evaluation* -topicality of the subject-matter of the theoretical knowledge given in general programs and educational standards of 11th—12th grade schoolgirls' physical education in the aspect of increase of physical education and health strengthening of the pupils. *Stage II. Situation correction* — preparation of the theoretical knowledge cluster of the 11th—12th grades physical education program. *Stage III. Situation expertise* — cluster expertise according to the criterion of schoolgirls' physical activity interests. *Stage IV. Purposeful simulation of a situation* — simulation of comprehensive high school girls' integrated physical activity education. A **poll** was performed according to 2 questionnaires of different content. **Questionnaire 1 for teachers.** Topicality of the subject-matter of the theoretical knowledge given in general programs and educational standards was evaluated in the aspect of increase of physical education and health strengthening of the pupils. The questionnaire was prepared according to the matter of theoretical knowledge given in the specified program and educational standards. **Questionnaire 2 identical to teachers and schoolgirls.** Expertise of theoretical knowledge cluster was performed following interests of schoolgirls' physical activity by means of evaluating subjects of the cluster articles in points. Taking into consideration international experience the questionnaire was prepared according to the cluster of the 11th—12th grade girls' theoretical knowledge of physical education drawn by the author. Subjects have been evaluated according to their topicality from one point (the least topicality) to ten points (the highest topicality). Following the existing system of assessment in the comprehensive school the ten-point scale was chosen. Weak and strong sides of schoolgirls' theoretical knowledge have been determined by means of a **Testing method.** The check test of theoretical knowledge and their practical applicability was drawn according to the cluster content.

Results. It was determined that the matter of theoretical knowledge given in general programs and educational standards for grades 11—12 of Lithuanian comprehensive schools is not topical for the 11th—12th grade girls in the aspect of increase of physical activity and health strengthening.

Evaluation of the matter of the theoretical knowledge cluster vary between the girls and teachers ($p < 0.05$): girls suppose that the most topical subjects are related to every-day experience, introspection, self-analysis, less topical — to application of practical knowledge ($p < 0.05$); teachers suppose that the topical subjects for the girls are related to girls' mode of life and acquiring of personal experience in physical activity, less topical — related to everyday experience ($p < 0.05$). The strong sides of the schoolgirls' theoretical knowledge according to the subjects given in the cluster are the subjects related to everyday experience, and weak sides - related to physically active behaviour. Result of purposeful intervention to the program of comprehensive high school 11th—12th grade girls' physical education is the model of physical activity education upon integration to everyday physically active behaviour.

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THE INFLUENCE OF SYSTEMATIC OCCUPATIONS BY THE PHYSICAL EXERCISES OF DIFFERENT DIRECTIVITY ON THE PHYSICAL FITNESS FOR WORK OF THE CHILDREN OF PRIMARY SCHOOL AGE

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Introduction

The purpose of this investigation was the study of the influence of the physical loads of different metabolic directivity on the indices of the physical fitness for work of the organism of junior schoolboys.

Methods

A study was conducted on the base of school № 31 in Grodno. There were participated the children referred due to the health status to the basic medical group of 112 people. The schoolboys were distributed, without the special selection, on 7 experimental groups (EG) and 1 control group (CG). In the course of experiment those occupying in the course of 10 months carried out physical loads identical with respect to the average intensity (60—80% of reserve FHC), but different in the directivity, the volume (20—40 min) and the multiplicity (3-6 once a week) of occupations. In accordance with the mechanisms of the power supply of muscular activity experimental groups were divided into: predominantly aerobic (EG-1, EG-2), aerobic-anaerobic (EG-3 and EG-4) and group with the increased volume of the loads of different metabolic directivity (EG-5 and EG-6). In the weekly cycle into EG-1, 3, 5 occupations were conducted 3 times, while in EG-2, 4, 6 they were 6 times. In EG-7 and CG occupations were carried out without the introduction of experimental components, but with different volume: in CG — 3 times a week, in EG-7 — 6 times a week. The study of physical fitness for work was conducted on the basis of the use of an indirect method of estimation MIO according to Dobein and the test PWC170. The record of the frequency of the heart contractions was achieved on the single-channel electrocardiograph EKIT-04. Duration of the first 7 R-R intervals after the end of load was determined.

Results and Discussion

The analysis of the results of the study showed that the greatest considerable increase ($p < 0.05—0.01$) of the physical fitness for work of the children of 9—10 years according to the absolute and relative indices MIO and PWC170 was noted in the schoolboys EG-1 (aerobic directivity of 3 occupations a week). After ranging given we they revealed that the greatest increase in the fitness for work occurred into EG-1 (aerobic directivity of 3 occupations a week), Eg-2 (aerobic directivity of 6 occupations a week), EG-5 (with an increased volume of loads of different metabolic directivity of 3 occupations a week), EG-6 (with an increased volume of loads of different metabolic directivity of 6 occupations a week), EG-3 (anaerobic directivity of 3 occupations a week), Eg-4 (anaerobic directivity of 6 occupations a week), Eg-7 (without the directivity of 6 occupations a week), CG (without the directivity of 3 occupations a week).

Conclusion

Thus, the level of different indices of physical fitness for work changes in the dependence on the volume and the directivity of experimental load. The schoolboys, who carry out in the groups with the predominantly aerobic directivity, showed the greatest shifts in the absolute and relative indices MIO and PWC170. As a whole, the children of experimental groups, who carry out the physical exercises of different directivity 3—6 times a week, they have higher average annual increases in the physical fitness for work in comparison with the subjects of the control group. Consequently, the goal-directed action on the organism of children in the range to 120—240 minutes in the week favorably influences the dynamics of their physical fitness for work.

THE DEVELOPMENT OF ORGANIZATIONAL STRUCTURES IN TOURISM INDUSTRY IN THE GLOBAL ECONOMY

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Abstract. Economical changes that occur in one part of the world almost without any delay spread to the other parts of the world. Only those companies and industries (tourism industry is no exception) that continuously look for new business opportunities and skillfully apply them are able to maintain their competitiveness in the global economy. New types of organizational structures can be considered one of those innovations. Global unions of businesses (networks), strategic alliances (unions) integrate various business activities that are dispersed in the global economic space. These activities are bound and make a united precisely functioning complex.

Purpose of the study — to investigate the development processes of organizational structures in tourism industry defining the causes and effects of their changes.

Methods. Analysis of economical literature, logical and comparative analysis of economical phenomena, graphical methods and their generalization.

New specific structures tend to form in the global economy. One of their results is the effect of synergy, which increases competitive advantage of each participant and structural unit as the whole. The strategy of synergy is fairly acceptable for the processes of planning and managing in tourism industry, in order to solve the problems related to technologies, costs, infrastructure, etc. The first global alliances in tourism industry appeared in the end of the 20th century in Germany (“Preussag”, “C&N Touristic”), France (“Nouvelles Frontières”), and Great Britain (“Thomson Travel Group”, “First Choice”).

The study performed by the authors indicates that intentional development of global alliances in tourism industry can result in negative effects as well. In the process of formation of these global networks companies and industries lose their national character (the peculiarities of national borders and national consumers seem to be ignored) and might become less flexible in dynamic business environment. Tourism industry products are usually intangible. It enables other companies to copy the effect of synergy very fast. When copying becomes obvious tourism companies are forced to initiate the revision of their product portfolio, as well as diversification of products and search for new market segments. The authors of this study identify the importance of competitors’ entry and withdrawal and analyze the life cycle of tourism industry, concentrating on entry-withdrawal stages. The results of this study show that the inclination of entry-withdrawal way indicates changes in market structure and the necessity of new organizational structures. The cycle shows that market cannot be “empty” — when some companies leave, they are soon replaced by new contrahents, even if those contrahents do not have a particular competitive advantage. The analysis of the life cycle of tourism industry indicates that the development of organizational structures in tourism industry is an objective process, which is particularly obvious in the global economy.

Conclusion. The study is dedicated to the analysis of the life cycle model in tourism industry. Their research shows that the changes of organizational structures in tourism industry in the global economy result in the effect of synergy. The effect of synergy increases competitiveness and affects alterations in market structure. The authors present the negative effects of this process as well: industries lose their national character and they might become less flexible in dynamic business environment.

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THE ANALYSIS OF HIGH-INTENSITY LARGE-SCALE CYCLIC MOVEMENTS IN TEAM HANDBALL

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Abstract

The intensity of cyclic movements in team handball can be classified into four categories of velocity (Šibila, Vuleta, & Pori, 2004). Category with the highest intensity is 4th speed class (4SC), when movements of players exceed the velocity of 5.2 m/s. The primary aim of the article was to analyse the 4th SC during the handball match and the frequency and distance of such events were of particular interest. Additionally, data on the quantity of highest intensity movements in 10-minute intervals of the match were being studied.

The sample group consisted of 36 male team handball players (body height 189 ± 2.4 cm; body mass 86.2 ± 4.4 kg; age 21.8 ± 3.1 years) with different playing positions. Specifically, 12 were wing players, 18 back players and 6 pivots. Data on work-rate of large-scale cyclic movements were collected from six model matches and at each of the matches one team was being monitored. At all of the matches certain environment conditions were standardized. During the matches data on intensity of cyclic movement (SAGIT, Ljubljana, Slovenia) were being collected and later interpreted with the use of descriptive statistics.

An analysis of the frequency of movements with highest intensity showed that players from the sample averaged 80 events of the 4th SC per analysed match. Average distance of these movements (sprints) was 8.1 metres. From the total of these events, distances of the 4th SC cyclic movements varied according to the part of the match played (10 minute intervals). During the first ten minutes and occasionally in the second ten minutes of the match, the distance of the 4th SC was significantly higher (between 119 ± 10.6 and 145 ± 13.3 metres), then during the last part of the match. From 50th minute until the end of the match the volume has nearly halved and amounted in average to 78 ± 11.6 metres

The results of frequency and distances of the movements with highest intensity during the match are in some parts comparable to results, acquired by Martin (1990), even though his methodology of data collection and classification based on simpler methods. As the handball match lasts 60 minutes, consequently it means that the players from the sample performed movements with highest intensity slightly more often than once a minute with the average distance of approximately 8 metres. Analysis of ten minute match intervals showed that players were not able to maintain the same level of intensity throughout the match. High loads in individual intervals of the match, which required big effort, also resulted in smaller loads in the second part (Cuotts, Reaburn and Abt, 2003). Reasons for smaller number of the highest intensity cyclic movements in the second half can be mostly found in the level of physical preparation of the players, included in the sample, as well as in the tactical plan of the teams, trying to maintain the achieved result.

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HEALTH EDUCATION METHODOLOGY

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The main **purpose** of this article is to understand the theoretical positions concerned about health education methodology.

Methods was analysis of literature sources and systematic analysis.

The the basic tenets of health education and health to be on the subject as values clarification, defining health, wellness, defining health education, health promotion, medical model, health model, basic assumptions of health education and health promotion (H.E.&H.P.), epidemiology, measures of death and disease, concept of relative risk, locus of control, environment, problems with excessive mikro& macro, types of prevention. (Chaney, 2006).

Philosophical schools of thought for health to be on the subject as needs a philosophy, dominant philosophies of H.E., cognitive based, decision making, behavior change, freeing/functioning, social change (Baudier et al, 2003).

Theoretical foundations to be on the subject as theory defined, purpose of a theory, health promotion theories and models of individual health behavior.

Social ecological model to be on the subject as social ecology, ecological model for health promotion.

The theory of reasoned action/ theory of planned behavior to be on the subject as theory of reasoned action, behavioral intention, attitude towards behavior, subjective norm, theory of planned behavior.

Precede planning model (Green&Kreuter, 1991, 1999) to be on the subject as precede model is composed of 5 phases and begins with the final consequences and works backward to the causes. Phase 1— social diagnosis, phase 2— epidemiological diagnosis, phase 3— behavioral and environmental diagnosis, 4 phase — educational and organizational diagnosis, predisposing factors, reinforcing factors, enabling factors, 5 phase — administrative and policy diagnosis, proceed planning model (Green&Kreuter,1999), proceed, 6 phase — process evaluation, 8 phase — impact evaluation, 9 phase — outcome evaluation.

Conclusions. Analysis of literature showed that in study of health education methodology has spanning the themes about the basic tenets of health education and health, competencies and responsibilities for health education, philosophical schools of thought for health, why use theory, social ecological model, transtheoretical model, health belief model, theory of reasoned action/ theory of planned behavior, TPB application, precede/proceed, precede application, planning principles and PATCH, needs assessment techniques, building a rationale, goals and objectives, interventions, marketing, implementation strategies and advocacy.

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EFFECT OF DIFFERENT TEMPERATURE ON KNEE FLEXORS AND EXTENSORS FOR MALES AND FEMALES

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The aim of the study — to establish the influence of muscle heating and cooling on knee- flexors and extensors for males and females.

Methods of the study. The participants of the study were 10 healthy male, age: 19—23 years; height — 177.8 ± 5.8 ; weight — 78.2 ± 6.1 and 10 female, age: 18—23 years; height — 166.4 ± 5.6 ; weight — 56.2 ± 6.1 , with no history of knee ligament. The study was performed in the human motoric laboratory of Lithuanian Academy of Physical Education in year 2005/2006. Then they were positioned seated (with hip joint at 90°) and each person made three repetitions (extension–flexion) to adapt to the performed exercise. The test was based on three repetitions of full range movement in knee joint at the speed of 180°/s (corrected after considering gravitation). There was 1 minute break between each measurement (first experiment) and the same exercise was repeated after the quadriceps muscle had been heating (second experiment) and had been cooling (third experiment). Before and after muscles cooling or heating we measured muscles temperature with needle thermometer (*Ellab A/S, tipas DM 852, Denmark*). The evaluated parameters were: peak torque [measured in N•m] and average power [measured in W].

Results and discussion. After individual analysis of values, we were found, that muscle heating or cooling before exercise didn't decrease power in max speed of knee extensors and flexors for males and females. Data analysis has shown that male obtained higher values of power in max speed and average power in flexion and extension at 450°/s velocity. The core muscle temperature after 45 min heating was 39.5°C (before — 36.93°C), after 30 min cooling — 32.55°C (before — 36.8°C). Young women are capable of longer-duration contractions than young men when performing sustained submaximal isometric contractions to task failure at low-to-moderate intensities. This sex difference is observed for several muscle groups, including adductor pollicis, elbow flexors, extrinsic finger flexors, back extensors and knee extensors (33). The difference in time to task failure for sustained contractions, but not submaximal intermittent contractions (16), performed by young adults is partially explained by differences in strength (21, 24). Such predictions are largely based on the physiological factors that affect the rate of heat production within the body and physical factors that affect heat loss from the body. These models were subsequently calibrated against data involving male responses to cold. Although data regarding female responses to cold are limited, the evidence suggests that differences in thermoregulation between genders are mostly due to anthropometric differences in body fatness.

The main conclusion. The evidence obtained in this study showed that, muscle heating or cooling before exercise didn't decrease power in max speed of knee extensors and flexors for males and females.

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THE EFFECT OF DIFFERENT TEMPERATURE ON KNEE FLEXORS AND EXTENSORS DURING FATIGUING EXERCISE AND RECOVERY

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The aim of the study — to establish the influence of muscle heating and cooling on knee- flexors and extensors, during fatiguing exercise and recovery.

Methods of the study. The participants of the study were 10 healthy male, age: 19—23 years; height — 177.8 ± 5.8 ; weight — 78.2 ± 6.1 , with no history of knee ligament. The study was performed in the human motoric laboratory of Lithuanian Academy of Physical Education in year 2005/2006. All the subjects have done non-stop 50 repetitions of knee flexion and extension at $450^\circ/s$ range motion on “Biodex System Pro 3” device (first experiment) and the same dynamic exercise was repeated after the quadriceps muscle had been warmed (second experiment) and had been cool (third experiment). Before (pre-exercise), ten minutes (post-exercise), 30 min, 1 hours 10 min and 24 hours after the fatiguing exercise, three knee extensions/flexions with angular velocity of $450^\circ/s$ were performed. A blood lactate sample was taken before initial measurements and following exercise at 5 and 30 minutes. The increase of creatinikynasis and muscle pain 24 hours after the fatiguing exercise.

Results and discussion. After individual analysis of values, we were found, that muscle heating or cooling before the exercise had no effect on muscle recovery time. Power in max speed was declined (A 0): knee extension normal muscle temperature — 18.1 ± 14.2 N·m, heating muscle temperature — 19.9 ± 14.3 N·m, cooling muscle — 20.8 ± 9.2 N·m; knee flexion normal muscle temperature — 9.0 ± 7.2 N·m, heating muscle temperature — 8.3 ± 9.0 N·m, cooling muscle — 5.8 ± 5.2 N·m, ($p < 0.05$) (Fig. 1). Power in max speed declined: knee extension ~ 80%, flexion ~ 85%. Recently, Nybo and Nielsen showed that force production and voluntary activation percentage in the exercised muscle groups (knee extensors) were lower during a sustained isometric maximal voluntary contraction following cycle exercise in hot (40°C , sufficient to raise body temperature to 40°C) than in temperate (18°C , final core temperature 38°C) conditions. Marino et al. has shown that African runners, who have a lower rate of heat storage at a given running speed than Caucasian runners, were able to outperform the Caucasian runners in hot (35°C), but not in cool (15°C) conditions during an 8-km time-trial. The difference in running speed between the groups in the heat was present from the onset of the time-trial, despite rectal temperatures which were only moderately elevated ($\sim 38^\circ\text{C}$) and not different between groups.

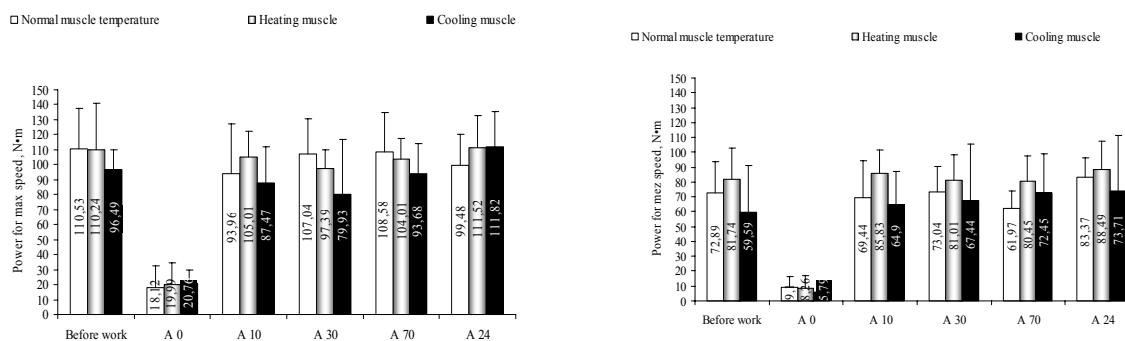


Fig. 1. Knee flexion and extension at $450^\circ/s$ range motion (power for max speed)

The main conclusion. The evidence obtained in this study showed that, muscle heating or cooling before exercise didn't decrease power in max speed of knee extensors and flexors. Muscle heating or cooling before the exercise had no effect on muscle recovery time, however increased a post-exercise blood lactate value. After 24 hours the creatinikynasis in muscles was increased.

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TECHNOLOGICAL INNOVATIONS IN GAMES PLAYERS

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Sports participants at high-performance level, alongside their coaches, continue to seek novel methods of gaining a competitive advantage of their opponents. Such attempts are reflected in novel technologies used in preparing for competition, acclimatisation for environmental stress, enhancing feedback from performance evaluation in training and match-play, and enhancing the recovery process following strenuous exercise. Innovative technology is utilised also in relating computer-aided evaluations of performance to performance and fitness assessment in laboratory conditions. The consequence is that the training stimulus can be regulated rather than monitored and games drills reconstructed. Emphasis is also placed on reduction of injury risk and enhancement of recovery through vibration training, deep-water running and contrast immersion. Attention is directed also to skills training where virtual reality systems are currently explored and offer promise for the future. Environmental stresses can also be simulated and used for experiential as well as physiological acclimatisation purposes. It is essential that these innovations are subject to scientific evaluations prior to their endorsement by sports practitioners.

DEVELOPMENT OF FENCING IN LITHUANIA UP TO 2006

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Contemporary science of history reveals a continually developing process of the knowledge of the past. One may understand the present only in the perspective of the past. No doubt, the heritage of each branch of sports is important for the history of our state. Fencing is one of the five disciplines whose representatives took part in all the Olympic Games from 1896 to 2004. Fencing, or the art of cold weapon operation that existed in ancient times and Middle ages, in Modern times took an honourable place in military actions and was closely related with the social culture and common life in various epochs.

In Lithuania interest in fencing arose at the beginning of the previous century. Although the period of its development is not too short, however, it should be noted that there scarcely are any publications on the development of fencing in Lithuania. Some competition programmes and other publications include some brief factographic information, yet, one confronts the absence of systematic data concerning the development of fencing in the discussed period.

The object of research: history of Lithuanian fencing.

The aim of research is to collect, analyze and summarize the historical facts about the evolution of fencing as a branch of sport in Lithuania.

Methods of research: 1. historical — theoretical analysis, systematization and summarize of historical material; 2. summarizing and systematization of the primary historical sources; 3. interviewing; 4. investigation of practical activities; 5. generalization of personal experience.

Results of research. Having analyzed the primary historical sources, i. e. the documents of the Fencing Federation of Lithuania; meeting minutes; Lithuanian periodicals; the memories of trainers and individual sportsmen and the material preserved in the Central State Archives of Lithuania, three periods were distinguished in the history of Lithuanian fencing which were determined by the political situation in the pre-war (up to 1939) Lithuania, in the Soviet Socialist Republic of Lithuania (1940—1989) and in Independent Lithuania (1990—2006).

Before the 19th century there were only some rudiments of fencing — it was not a common branch of sports, although the first publications on fencing had appeared in the Lithuanian language, yet, in the pre-war period the level of the fencing technique was very low (the elements of it were used as a part of physical exercises). It has been determined that there is no data about official fencing competitions held in Lithuania at that time. Fencing was mainly practiced by military officers and students as corporation members.

The period between 1940 and 1989 was extremely important for Lithuanian fencing since:

1. first official fencing competition took place;
2. the Fencing Section was established in 1950;
3. at the beginning of the second period fencing was cultivated mainly in Vilnius, Kaunas and Klaipėda; from 1976 it was cultivated in Šiauliai, Panevėžys and Alytus. It is interesting to point out that in 1976 the greatest number of fencing trainers in the whole history of fencing (20 trainers) were involved in the discussed activity;
4. At the beginning of the period four types of weapon were used in fighting (foil, epee, saber and bayonet). In 1959 the bayonets were refused and in 1986 the same happened with the sabre. The year 1953 was the most successful for the Lithuanian fencers: J. Udras became the Champion of the USSR, and the whole team of the Lithuanian fencers took the first place in the same competition. J. Udras was the only Lithuanian who took part in the Olympic Games twice (in 1952 in Helsinki and in 1956 in Mellborn).

The period of the Restoration of Independence in Lithuania in the field of fencing has been marked by the following:

1. in 1972 The Fencing Federation of Lithuania (LFF) was accepted into the International Fencing Federation (FIE) and Lithuanian fencers received the right to participate in the most important world competitions;

2. from 1993 the competitions take place only between the fencers of Vilnius and Kaunas. Only four fencing trainers work in Lithuania at present;

3. during the discussed period the best results were achieved by: R. Ažukienė — the 8th place at the Europe Championship; Ž. Blauzdytė — the 6th place at the world competition of cadets; T. Krasikovas — the 8th place at the Juniors European Championship and A. Ažukaitė — the 7th place at the world competition of cadets.

TRENDS IN THE TRAINING OF PHYSICAL EDUCATION TEACHERS

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The profession of PE teacher belongs to the oldest occupations in the area of physical education and sport. PE in primary and secondary education has been a compulsory subject for more or less 140 years in the Czech Republic and the concept of education of PE teachers has a similarly long history. During this very long period and especially at present three kinds of changes in the curriculum of the training of PE teachers could be observed.

The first reason for the evolutionary modernization of PE teachers' studies is a reflection of the changes in PE and sport activities, especially their growing popularity among young people. This leads to changes in the content of the curricula of PE teachers as well, especially in the acquisition of sporting skills between school curricula and the content of education of PE teacher may be observed. The former extent of their specific activities, competences, and learning outcomes etc., which were obtained at universities, should be deeper, wider and flexible.

The second group of common reasons which lead to more revolutionary changes in the training of PE teachers is connected with an on-going, very intensive and emotional discussion about the system, structure, content and controlled mechanism of education at universities which has been stimulated by the Bologna Declaration which dealt comprehensively with tertiary education in Europe (1999) and the Copenhagen Agreement about European qualifications (2002). The application of these documents and some others leads not only to a structural approach in the preparation of professionals but also to a split of the tertiary education into the bachelor's, master's and doctoral levels. The new factor which is becoming more and more important is the adaptation of study programs to the labor market, and to the increase of the employment rate.

The third reason which specifically intervenes in PE teachers' pre-gradual studies is the beginning process of a wider convergence and harmonization in Europe and a transparency in the main areas of sport science studies. In order to increase students' mobility in the main branches of PE studies it is necessary to define their commonly accepted competences and learning outcomes in the education of PE professionals. This requires the development of a main branch in the model structure of the curricula of PE teachers, having in mind a process of recognition and European integration of diplomas, a convergence and respect of the autonomy of educational institutions and an acceleration of their innovation as well.

In this paper we would like to present the general results of the main tendencies which appeared in the framework of the AEHESIS project and its PE research group in the course of European study programs for PE teachers.

The general trends in the curricula of PE teachers are expressed in the number of lessons of direct teaching and the personal study of students, as well as in the distribution of the ECTS credits in the group of subjects such as: Adventure Activities, Dances, Games, Gymnastics, Swimming, Track and Field, Teaching/Learning Data, Education/Teaching Science, Teaching Practice, Natural Biological General Science, Natural Biological Application Science, Social General Science, Social Application Science, Dissertation, School Base Practice and others which we shall present. It is evident from them that there are significant differences in the existing curricula.

The process of the harmonization of these different approaches, according to teaching subjects only (different titles, numbers of lessons) is very difficult and not realistic. A better way is finding similarities in competences and learning outcomes which are developed in various learning subjects that have different names in the curricula of PE teachers study. We suppose that the application of this approach is a promising method of harmonizing different curricula in the training of PE teachers in present day Europe. It contributes not only to the quality of the training of PE teachers but also helps to increase students' mobility.

ADAPTED MOTOR ACTIVITY AND QUALITY OF LIFE. IS IT POSSIBLE ONE WITHOUT THE OTHER?

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Activity, participation and body functions became a central issue on the evaluation of the degree of disability that can be found in a person after the WHO ICF classification (2002). Before, this Classification was published, the level of mental deficiency was defined by the AAMR on a more ecological perspective, adopting the concept of Adaptative Behaviour. One and the other of these concepts highlight the importance of the interaction of the person with his/her environment more than the mere functional evaluation centred on intra-individual variables.

Adaptation of motor activities can be seen as the process to identify and modify the different variables of each activity in order to make them more complex or more simple and this way make them possible and motivating for each individual. Among the possible variables to (performance, task, environment), a growing importance is assigned to the adaptation of the environment.

On the other hand Quality of Life (QL) is a construct that has similar basement. Like Adapted Motor Activity (AMA) is highly associated with the kind of interaction that each person establishes with the environment. Both on its objective and subjective dimensions, QL is related with the satisfaction that each individual gets from different levels of his/her social, emotional, motor, professional, intellectual activities.

Participation in Motor Activities with leisure, educational or performance aims, is recognised as important experiences leading to a better level of self esteem, social participation and a overall feeling of wellness.

In this communication we will stress the importance of the environment variables and methodologies that can contribute to make AMA an important contribution to QL. Inclusion/Exclusion, competition, pleasure, group dynamic, etc. are decisive features in order to make AMA a indispensable experience for a good QL. As it is well known, motor experiences are not positive themselves but need to be used in the framework of the needs, projects and values of each person.

AMA and QL: one without the other? We don't think so.

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DYNAMICS OF THE JUNIOR AGE SCHOOLGIRLS SPRING BY TRAINING IT FOR TWO MONTHS

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Introduction. Sport educationists and scientists relying on theories of organism's adaptation are using different systems to plan intensiveness of sport exercises. These systems differ in allocation of intensity and ways the exercises are performed (Komi, 1992; Enoka, 1994; Wilmore and Costill, 1994; Karoblis, 1999). Our question is how the two months lasting jump training may influence junior school age girls' spring.

Aim of the research is to measure the dynamics of the junior school age girls' spring by training their spring for two months.

Subjects of the research. Normally developed junior school age girls ($n = 17$) have taken part in the research. Their age is 10 ± 0.5 years, body height is 143.0 ± 5.7 cm, body mass is 33.4 ± 5.1 kg.

Method of the research. Schoolgirls performed vertical jumps on the contact platform by bending their knees to 90 degree angle. The height of the vertical jumps was calculated according to Bosco and Komi (1979) method. Vertical jumps were fixed by putting the results into the personal protocol of each schoolgirl. Results were processed using the methods of mathematical statistics.

Organization of the research. Schoolgirls have trained their spring for 8 weeks. Exercises were done two times a week in a forenoon. After 10 minutes of non intensive warming up schoolgirls were starting their jumps on the contact platform by bending their knees to 90 degree angle. Arms were put on the waist. Each schoolgirl during the day of exercises has performed about 50 jumps. With intervals of 30 seconds jumps were performed putting maximum efforts. We asked to jump as high as possible.

Results of the research. The results of the research have shown that 8 weeks of vertical jump exercises improved schoolgirls' spring considerably. The average of the tested jumps after 15 trainings improved from 21.2 cm to 27.5 cm (it makes more than 6 cm). Analysis of arithmetical average of vertical jumps shows gradually improving results. Statistically reliable difference comparing to the first training ($p < 0.05$) is found since the seventh training. As a consequence of exercises results were improving slowly, but progressively. Height of the jump is determined by many factors. We could consider, that the spring, comparing to the results of the first training, have improved considerably because of intensive and regular jump exercises. Fact, that the results of the jumps were improving gradually, shows that schoolgirls have improved technique of the jump. As the results of the research show, all the schoolgirls improved their results of vertical jump. This confirms consistent pattern of organism's adaptation to the physical loads (Kommi, 1992). On the other hand, difference between the best and worse jumpers after the trainings has increased. This shows that results were influenced by such factors as different reaction of junior schoolgirls towards the proposed physical load.

Conclusion. Results of the research have shown that 8 weeks of vertical jump exercises improves the results considerably. On the other hand, preliminary results give no ground to predict them in the future.

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THE PSYCHOSOCIAL ENVIRONMENT FOR THE INTEGRATED EDUCATION OPPORTUNITIES OF THE DISABLED IN LITHUANIA

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Combating social exclusion of people with disabilities is the major objective of the EU policy concerning the disabled (EC, 1996). The following goal of the research was on the basis of comparative analysis, under the designed theoretical model, to determine psychosocial assumptions and possible barriers for the disabled schoolchildren to be integrated into the general education system.

Participants were: 393 teachers working in: nonintegrated (276), integrated (15) and special (102) schools and 2471 children from the same schools (1958, 126 and 382 accordingly).

Results showed that: the majority of able-bodied and disabled children have the positive intensions for interpersonal interactions (>82%) and positive emotions (>69%) independently of the discrepant character of interpersonal contacts, different conditions of education and family life and despite of low level of knowledge, the cognitive dimension of teachers' attitude was dependent on the type of school they are working at and the behavioral dimension was diverse depending on contacts with disabled students and a level of perceived competence and knowledge.

The main conclusion. The research data confirm a positive interpersonal relationship of schoolchildren with and without disabilities as well as their feelings towards each other. A rather high level of self-esteem, self-assurance and self-actualization among the disabled schoolchildren denies a myth of those who are against their social integration that in the comprehensive schools the schoolchildren without disabilities would definitely do wrong to their schoolmates with disabilities. The research data propose that a general attitude of teachers from comprehensive schools to the integration of the disabled is positive and that they experience a great need for knowledge about the problems of the disabled. The research data reflecting a negative attitude of the teachers from special schools towards the integration of the disabled into the general system are to be considered as an expression of their personal interest. Such teachers would lose their jobs if the segregated special education system were reformed in Lithuania.

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PRACTICAL APPLICATION (INDICATION) OF THE INDEX OF BUTTERFLY PROPULSION FOR ASSESSING THE PERFORMANCE OF EXPERT SWIMMERS

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Introduction. The index of butterfly propulsion (IBP) developed by Boulesteix et al. (2002) is the sum of the durations of arm and leg propulsive actions, expressed as a percentage of a complete stroke. Boulesteix et al. (2002) showed that with increases in pace, the expert swimmers decreased temporal gaps between entry of the hands in the water and high break-even point of the 1st undulation, and beginning of the hands' backward movement and low break-even point of the 1st undulation, and increased the IBP, indicating more relative time used by the propulsive actions of the arms and legs, as well as greater continuity in these actions.

Taïar et al. (1999) defined the three most propulsive positions during a butterfly swimming cycle, as: the end of the external sweep, the end of the internal sweep and the end of thrust. Using crash dummies represented ex-world champion and another swimmer and a drag-measuring device, Taïar et al. (1999) showed relationships between swimming movements, passive drag and swimmer's performance: "the fastest swimmers seem to optimize the ratio between trust and drag by adapting their movements during specific phases of the swimming cycle".

Consequently, the increase in the IBP may not always reflect the greater body acceleration and therefore greater swimming velocity.

The aim of this study was to define practical implications of the index of butterfly propulsion to assess performance of expert swimmers.

Methods. Five well-trained swimmers performed three 25-m butterfly swims starting in the water at mean mid pool speed of 50 m, 100 m and 200 m races. Subjects were ranked as Lithuanian top-level swimmers whose expertise was expressed in percentage of the world record for a 100m butterfly: the mean was $91.53 \pm 1.33\%$. Performances were filmed from side view underwater with one video camera (25 frames per second) moving parallel to the swimmer on a tracking system. Velocity was calculated from the video recording over a 10-m distance during which the stroke phases were measured. Moments defining begin-end phases were determined from video analysis using a 50 Hz video player of SIMI Motion 2D software. IBP index was calculated by addition of the relative values of the propulsive times of the legs and arms during a complete stroke of swimming.

Results.

Results confirmed the findings of Boulesteix for increases in speed between 200 & 100. However not between 100 and 50. Small changes in performance of high level swimmers within one distance are not reflected in this index. The changes nevertheless within a race need further to be investigated.

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PEDAGOGICAL ALGORITHMS OF SPORTS ORIENTED PHYSICAL EDUCATION OF CHILDREN OF THE ELDER PRE-SCHOOL AGE

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Introduction. Necessity of using of the elected elements of sports training with the purpose of perfection of physical education of children of preschool age admits as many experts. It is connected, first of all, by that the technique of carrying out of employment on the physical education, developed in system of preschool education, does not promote in enough full measure of realization of improving tasks as it is directed, mainly, on development of impellent skills. The physical loading offered on employment on physical education in preschool educational establishments, is insufficient for achievement preparation an organism of children and effective development of impellent qualities [1].

The purpose of research — to work out algorithm and a technique of using of circular training during physical education of children of the elder preschool age.

Methods. By work out of complexes of circular training age specificity of children 5—7 years, feature of development of impellent function, adaptable resources and opportunities was taken into account. The contents of circular training is made with technically simple various exercises covering all basic muscular groups: basic exercises without a subject and with subjects, the basic movements — exercises in climbing, crawling, jumps, impellent actions with a ball (beat, throws and catching), etc. Used exercises should be well mastered by children so that they could carry out them freely enough, independently and with desire. With the purpose of creation at children of interest to circular training beforehand thought over organizational and methodical receptions are used. Circular training is organized so that it was perceived by children as a part of game. This is promoted by subject complexes of circular training in which each exercise at “station” has the figurative name, or receptions of imitation and imitation, and also exercise with subjects are applied. Use of corresponding attributes is effective.

Results. Results of pedagogical experiment testify, that using of circular training in physical education of the elder preschool children provides the optimum level of loading adequate to a physical condition engaged, and promotes positive changes and high rates of a gain of parameters of physical readiness of children of 6—7 years. Employment by the offered technique rendered positive influence on a functional condition of preschool children that was showed in authentic decrease in parameters of frequency of intimate reductions and frequencies of breath in the rest testifying about economization of functions of cardiovascular and respiratory systems.

Discussion / Conclusion. Using of subject complexes of circular training promotes education of interest of preschool children to employment by physical exercises that is expressed in increase of activity of children during employment, preference of employment on the physical training, including circular training, to other forms of their carrying out, and also using of plots and exercises from complexes of circular training in independent game and impellent activity.

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THE EFFECT OF AEROBIC EXERCISES ON BLOOD GLUCOSE CONCENTRATION IN HEALTHY GIRLS AND GIRLS WITH THE TYPE 1 DIABETES MELLITUS

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Diabetes mellitus a metabolic syndrome consisting of two main groups, type 1 and 2, is characterized by absolute or relative insulin deficiency or insulin resistance (1). The major modes of treatment for diabetes are insulin administration, diet and exercises (2). The role of regular exercise and physical training in improving glycemic control (regulation of blood sugar levels) in patients with type 1 diabetes has not been clearly defined and is controversial (2). In people with type 1 diabetes, glycemic control might or might not be improved with exercise. But it is known that regular physical activity improves cardiovascular fitness, increased lean mass, improved blood lipid profile, enhanced psychosocial well-being, lowers blood glucose, and decreased body adiposity (3, 4, 5). Exercise plays a big part in the lives of children and teens with type 1 diabetes too, but there aren't many standard recommendations on how to manage blood glucose levels during exercise (6). We wanted to study the effects of aerobic exercise on glucose concentration in healthy girls and girls with type 1 diabetes mellitus.

Objective: the aim of this study was to estimate the effect of aerobic exercise such as swimming and aerobics on blood glucose (BG) concentration in girls with type 1 diabetes mellitus ($n = 19$, age = 16.5 ± 0.24 yr, mean \pm SD) and healthy girls ($n = 28$, age = 16.9 ± 0.36 yr). **Methods:** two experiments have been done. The first experiment was 7-day duration physical exercises program (7-dayPP), consisted of aerobics and swimming in the water. The other experiment was 14-week duration swimming program (14-weekSP). Glycemia control was assessed by blood glucose (BG) level (mmol/l) monitoring before and after every training during 7-dayPP and 14-weekSP. **Results:** 7-dayPP have decreased blood glucose concentration for all subjects ($p < 0.05$) but, swimming in the water had a marked impact on BG control for girls with type 1 diabetes mellitus than aerobics ($p < 0.01$). After the 14-weekSP, hyperglycemia significantly decreased for all subjects, but it's response to the regular physical activity in the water was the highest in diabetics ($p < 0.001$) too. **Conclusion:** swimming and aerobics decreased BG concentration for all participants, but only swimming has a marked impact on the dynamics of BG level for girls with type 1 diabetes mellitus.

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CONTROVERSY OF MODERN SPORT TECHNOLOGIES IN ATHLETES' TRAINING

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Introduction

The sport performance of elite athletes' are determined by a great number and the specific character of the sports. But in controversy — philosophical point of view on training and sport performance may act as positive or negative influence to sports development (Lyle, 2006). Competition analysis provide information about past performances and serves for predictive model development (Franks & McGarry, 1996). A problem as well is resulting out of the vague knowledge about physiological requirements in competition. The inadequate result can be seen how the interpretation of test results are used in practice and particular practice aims and training methods (Hartmanh, 2003). The aim was to review multiple point of view of interaction between training and sport performance.

Methods

Meta analysis.

Discussion

The Performance-Potential-Metamodel (PerPot) describes the dynamics of load performance interaction by means of delayed flows between potentials. The basic idea is that of antagonism: the load input in the same feed a strain potential as well as a response potential, which then decrease respectively increase the performance potential by delayed flows (Perl, 2003). Deterministic modelling the trajectory with individual parameters of the athletes and the various conditions of the slopes faces the number, complexity and interdependence of independent variables. Genetic algorithm (Goldberg, 1989; Seifriz, 2001) helps to optimise the trajectory in less time compared to deterministic optimisation methods (Mester, 2003). But in controversy diversity prevailed over unity on this point of view (Kelso, 2003; Schollborn, 2003; Ward, 2003). The biomechanics indices have great influence on sport performance in many sports events (Ariel, 1996, 2000). The achieved distances in triple and long jumps strongly dependent upon the available horizontal velocity in runup and each of the take-offs. But in elite sport velocity profiles and performance is highly individual (Pyke, Margot, 2004). In trained endurance athletes VO₂max is essentially (70%) influenced by the O₂-transport system which in turn is determined by the heart volume, blood volume and total haemoglobin mass. In competitive sports high altitude training is used to increase EPO concentrations and erythrocytes in order to improve O₂-transport capacity in blood (Wilber, 2004). Altitude training in order to improve performance have been using several decades. But there are no unity scientific findings of training methodology (Achtzehn, Mester, 2006; Birkeland et al., 2000; Friedmann et al., 2001; Gore et al., 2001; Janssen, 2001; Shave et al., 2002; Schouweiler, Stray-Gundersen, 2002; Vogt, Angermann, Graber, Fllick, Hoppeler, 2006). One of the main scientific problem is to identify talented young athletes. Practice-based models of talent identification lack the precision and validity for use in scientific research programmes. Nevertheless a process incorporating detection, identification, selection, development and perfection can help structure a quasi-scientific approach (Williams and Reilly, 2000). There are indications of a strong genetic component in performance but systematic training and development programmes can strongly influence the determination of talent (Reilly, 2003). Monitoring is one of the main tools in order to manage athletes' sport performance. But seldom testing may give quite wrong information (Mester, 1993). Circadian rhythms do exist for certain metabolic variables (Carandente, 2005), being most apparent at rest, and concur with other studies in that time of day needs to be controlled when making comparisons of metabolic parameters (Forsyth, Reilly, 2006).

Conclusion

Scientific research findings and new sport technologies may have more diversity as unity because of athletes' individuality.

FACTORS INFLUENCING SPORT PARTICIPATION AMONG ATHLETES WITH SPINAL CORD INJURY

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Wheelchair users with spinal cord injury benefits from sport by many different ways. Nowadays is no daub that by taking part in sport activities persons with spinal cord injury can improve health, fitness, emotions, feelings, hopes and attitudes (Levi, Hultling, 1999; Tasiemski, 2000; Tasiemski, 2004). By this point research works revealing factors and means influencing sport participation among athletes with spinal cord injury are important.

The aim of the research was to examine the relationships between pre- and post-injury sport participation among active individuals with spinal cord injury.

Methods and organization. In particular, factors that influence individuals with spinal cord injury into sport were identified. A total of 63 individuals with spinal cord injury currently participating in wheelchair basketball, swimming and athletics were recruited. A total of 44 subjects were active pre-lesion, and 19 subjects were inactive pre-injury. A Disability Sport Participation questionnaire developed by Williams, (1994) was used for data collection. The questionnaire was distributed through the Lithuanian Disabled Sport Federation during the national wheelchair basketball, swimming, athletics championships. Personal, impairment, health and fitness, socialization, and participation data of athletes with spinal cord injury were collected. Groups of active pre-injury and inactive pre-injury were compared.

Results. For athletes who had been active pre-spinal cord injury, the in-hospital rehabilitation program and specialized sport club for people with disabilities were more important contexts for introducing the sport after injury to individuals. Friends and peers with disabilities were much more influential as initial and continuing socialization agents than rehabilitation therapists. The main reasons for athletes with spinal cord injury who participated in sports after injury were for fitness, fun, health, and competition, although many athletes noted that social aspects and rehabilitation also influenced their sport participation. This study identified social contexts, social agents, difficulties, sources of information, and reasons for sport participation of athletes with spinal cord injury. The results may offer some directions for the improvement of rehabilitation programs for people with spinal cord injury and also help the development of appropriate strategies to encourage people with spinal cord injury to participate in sports and leisure activities.

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THE PECULIARITIES IN INTERACTION OF ANTHROPOMETRICAL DATA, AGE AND SPORTS RESULTS OF DISCUS THROWERS (MEN) IN THE WORLD TRACK-AND-FIELD ATHLETICS CHAMPIONSHIPS

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Research aim was to determine the peculiarities of the interaction of the anthropometrical data, age and sports results of discus throwers (men) in the world track-and field athletics championships.

Research methods and organization. 1. Analysis of documents and literature; 2. Mathematical statistics (mean, standard deviation, statistical significance of mean differences according to *Student* criterion); 3. Comparative analysis.

The peculiarities of the interaction of the anthropometrical data (height, weight), body mass index (BMI), age and sports results of the participants (n=120) of 10 world track-and field athletics championships in the event of discus throwing were estimated. The data about the participants of the world track-and field athletics championships were received from the official documents —“10th IAAF World Championships in Athletics Statistic Handbook Helsinki 2005“.

Discussion. If we want to prepare the sportsmen purposefully we need to establish the preparedness of elite sportsmen and the influencing factors of it continuously (Lees, 1999; Mester, 1993; Reilly, 1993).

There were no statistically significant differences in the height, BMI and age between the prize-winners of the world track-and field athletics championships, compared to the analogical indicators of the medal-winners of the last world championship in Helsinki in 2005 ($p > 0.05$), though there is a tendency in the increase of age of discus throwers who won medals. The weight of medal-winners in the Seville world championship (110 ± 0.58 kg) was statistically significantly lower compared to the weight indicators of prize-winners at the Helsinki world championship in 2005 (122 ± 7.21 kg) ($p < 0.05$). The age average of the participants of the first world championships (26.8 ± 3.30 m in Helsinki, 1983; 26.0 ± 3.30 m in Tokyo, 1991; and 26.8 ± 4.00 m in Athens, 1997) was statistically significantly lower than in the Xth world championship in Helsinki, in 2005. However, the anthropometrical data and BMI of the finalists of the world championships did not differ significantly compared to the finalists in discus throwing event in the last world championship ($p > 0.05$).

Having estimated the peculiarities of the interaction of the anthropometrical data, age and sports results we can claim that the competitive result is mostly influenced by the age of athletes ($r = 0.803$), and the influence of height. Weight and BMI is not so much significant ($r = 0.509$; $r = 0.224$; $r = 0.393$). The mean intensity of correlation was found between the indicators of sports results and height of finalists ($r = 0.561$).

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LITHUANIAN SWIMMERS AT THE WORLD'S BIGGEST SWIMMING EVENTS

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The biggest *athletic* competition in the world *consists* of: Olympic Games, World Championships, and World Cups. FINA, *the* international swimming federation joins four *events*: swimming, diving, water polo and synchronized swimming. Swimming is the most popular *event comparing* to the other three above mentioned *venues*. Swimming is cultivated at the all *of the* biggest Lithuanian cities, but diving as a sport is *favored* only in Vilnius and Kaunas. There are some water polo teams in Lithuania, but this sport is not very popular in Lithuania. Synchronized swimming is only for pleasure. There are some *synchronized swimmers* in Vilnius and Kaunas, and Šiauliai city government is thinking about *supporting these* groups in this city.

The aim of our investigation is to analyze Lithuanians swimmers' performance at the biggest world swimming competition.

The tasks of investigation. To show the history of swimming competition at the Olympic Games, short and long course World Championships and World Cup events and to analyze the Lithuanian swimmers' performances at *these events*.

Methods of investigation. Analysis of historical papers of the competition, competitions results' *documentation*.

Obtained results. Swimming in Olympic Games was *started* in 1896. Long course swimming World Championship started in 1973, and the first Short Course swimming World Championship was held in 1993. World Cup swimming competition dates from 1989. Swimming as a branch of athletics in Lithuania started in 1924 in Kaunas, where *the first National Lithuanian* swimming competition *was held*. After the Second World War Lithuania was occupied by Russia and become one of the Soviet Union republics. *The* Lithuanian athletes at the international competition *took* part together with Russian and other 14 Soviet Union Republic athletes. It was necessary to win Soviet Union swimming championship *first in order to become* a member of the *Soviet Olympic swim* team. There were 5 swimmers from Lithuania who took part at the Olympic Games as members of Soviet *swim* team. The very first participant from Lithuania at *f* the Olympic Games was B.Užkuraitytė. She took part at Munich Olympic Games in 1972. Lina Kačiušytė and Robertas Žulpa becomes an Olympic champion in 1980. In 1976 in Montreal Arvydas Juozaitis won the third place in 100 m breaststroke. In 1992 Raimundas Mažuolis from Vilnius swam in the preliminary of 4×100 m freestyle relay together with others Soviet swimmers. In the finals this team won the silver medal.

The best independent Lithuanian swimmers' achievements are: R.Mažuolis took 10th place at 1992 Olympic Games and 13th place by Darius Grigalionis from Panevėžys.

Lina Kačiušytė became world swimming champion and record holder at the Berlin World Swimming Championship (1978). She is the best *current Lithuanian* swimmer.

In 1996 Dita Želvienė won *the* title of the best World Cup freestyle sprinter. In 2004/5 Lithuanian swimmer Saulius Binevičius became a champion in *the* Moscow World Swimming Cup competition in 200 m. freestyle. Vytautas Janušaitis become the 2nd and 3rd place winner in Berlin and Stockholm, and Moscow World Cup in 2005-2006.

In 2005 long course World Swimming Championships Lithuanian 4x100 freestyle relay took the 4th place.

Findings. Lithuanian swimmers were known in the *swimming world* from 1972 and 1976 Olympic Games. *In those years they* were a part of the Soviet Union team. 1996 year *marks* the beginning of independent Lithuanian swimming *effort* in world swimming arena.

THE VARIABLE OF SWIM RESULTS DEPENDING ON THE SWIMMERS CLASSIFICATION OF DISABILITY

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It is widely recognized that swimming is a valuable physical activity for people of all ages and occupations. It is a sport where even the most disabled persons can participate. Therefore swimming for the disabled is becoming ever more popular worldwide; there are European and World Championships for the disabled. Swimming is an event in Paralympics.

Research Objective: To perform an analysis of the influence of disability to the free style men's and women's swimmers the Athens Paralympics 2004.

Research Assignment: 1. To determine the variance of men's and women's free style swim results in terms of their disability classification at the Athens Paralympics. 2. To compare men's and women's results variance likeness as well as differences tendencies.

Research Methods: Literature source analysis. Free style swimming competition results analysis of the Athens Paralympics (2004). Mathematical statistical analysis.

Research Organization: During the first phase an analysis was performed of the literature sources according to the working agenda. During the second phase we analyzed the official Paralympics competition results reports, which contain all of the disability group classification competition results. We calculated all of the free style men's and women's swimming results averages, *average squared deviation*, and the participants' results' average difference significance.

Results: The variance of the different disability classification men's swim results in the 50 m free style event according to the classification data is presented in Table 1.

Athens Paralympics Games men's 50 m free style swimming results average table

Disability group	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
Average	111,71	72,91	52,63	40,44	36,68	32,42	30,03	29,13	27,30	25,86	27,92	25,88	26,01
Average difference	38,80	20,29	12,19	3,76	4,26	2,39	0,91	1,83	1,44	2,06	2,04	0,13	0,00
Difference %	34,73	27,82	23,16	9,30	11,61	7,36	3,02	6,27	5,28	7,39	7,32	0,50	0,00
Difference from the worst result %	0	34,7	52,8	63,8	67,2	71,0	73,1	73,9	75,5	76,8	75,0	76,8	76,7

Summarizing the obtained data we can state that the greater the athlete's disability, the poorer is the performance. S1—S5 groups' classification swim results standard deviation is very large, therefore we can state that within these classifications there is less competition than in the S6—S10 classification groups. It is evident that the greater the swim distance, the greater results difference depending on the classification. The least influenced are the sight disabled. S12 and S13 class men and women swimmers with their average results in the free style swim events statistically did not differ from one to another.

THE ANALYSIS OF SHOTS LOCATION ON WINNING OR LOOSING BASKETBALL GAMES

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A quick and operative analysis of information appears to be one of the main reasons for using information technology in basketball game researching (Ibañez *et al*, 2003). During training sessions and competitions coaches frequently make decisions based on intuition and experience, not using objective data. Thus, it is extremely important to survey and analyze quantitative and qualitative indices for both basketball game theory and practice

Research objective: establish and evaluate several indices of team performance of elite basketball players.

Research methods: 1. Analysis of literature sources. 2. Pedagogical observation. 3. Mathematical statistics.

Research organization: During Euroleague competitions in 2004/2005 season, team performance of elite basketball players has been surveyed (n = 10).

Research results and discussion.

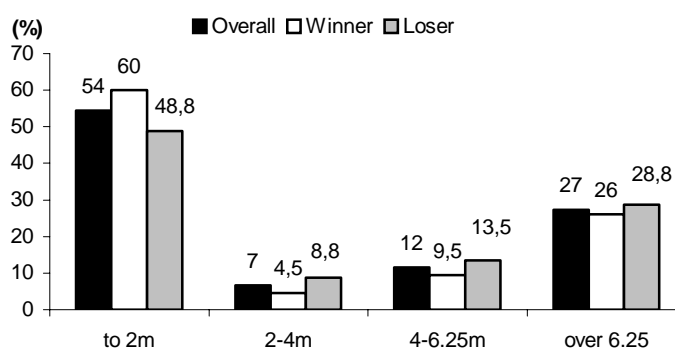


Fig. 1. Successful shot distribution depending on the distance from the basket hoop

Distribution of points scored by elite basketball players during a competition and recorded using the computer program, allows maintaining that during a competition, basketball players most frequently try to shoot from the distance of less than 2 m from the basket (Fig. 1), these attempts constitute 54 % of overall amount of scored points, 7 % of overall amount of scored points is scored from 2-4 m. 12 % of overall amount is scored from 4 — 6,25 m, and 27 % of overall amount is scored when the distance from the basket is more than 6,25 m. The team on top has taken the greatest amount of successful shots from the near distance (less than 2 m from the basket hoop) — 60 % of all successful shots, and the smallest amount of successful shots has been taken from the distance of 2-4 m. from the basket hoop. When analyzing the shooting direction towards the backboard plane, we established that on average, the teams most frequently take successful shots from the left side of the court — 37 %, the team on top presents itself most successful from the left side as well — 38,2 %, and the team that has lost the game appears to be most successful from the right side of the court — 39 % of all successful shots.

Conclusions:

1. During Euroleague competitions, a team on top most frequently took successful shots from the near distance (less than 2 m from the basket hoop), 60% of all successful shots, and the smallest amount of successful shots is taken from the distance of 2—4 m — 4.5%.

2. During Euroleague competitions a team on top most frequently took successful shots from the left side of the court, 37% of all successful shots, and a team that has lost the game has been most successful from the right side of the court — 39.2% of all successful

shots.

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ASSESSING VOLUNTARY AND MUSCLE ACTIVATION DURING THE ISOMETRIC WORKLOAD IN CHILDREN AND ADULTS

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Summary. A lot of attention exercise scientists are focusing at skeletal muscles workload specifications, their power generation, fatigue and recovery mechanism and localization place to determine. For skeletal muscle power and their fatigue level a big influence has workload type, intensity, duration, regimen, resting periods (Skurvydas, 1997). A performed research results showed, that muscle fatigue can appear because of enlarged metabolites concentration (Edman & Lou, 1990), glycogen concentration reduce in mioplazma (Chin & Allen, 1997). In child growing and developing body there is not only a structural but and functional changes are taking place. It is common opinion to think, that in adolescence it's so easy to destroy a youngster muscles system development, because during this period of time, muscle is maturing and growing in a more like rate (Malina & Bouchard, 1991). Researchers interest in determination of isometric workload influence on muscle's fatigue research was and will be altered for a many years in advance, and it's a very important point in activities concerning sport and everyday life. By our performed test, we are trying to face, why and in which particular way a childrens and adults voluntary muscle power is changing after performing an isometric workload. Obtained data should enable to decide in more clear way about different aspects or athlete training questions, which from other hand also will help to improve training process management and individualisation.

Research aim. To determine and compare voluntary muscle strength for children and adults during quadriceps muscle activation.

Research methods. Healthy children participants ($n = 13$, average age 13.6 ± 0.5 years, height 164.2 ± 11.0 cm, weight 50.6 ± 9.4 kg), who did not exercised regularly but had physical education lessons twice in a week. The physical development level of children participants was similar and healthy not exercising adults ($n = 16$, average age 21.5 ± 1.9 years, height 173.5 ± 6.9 cm, weight 65.9 ± 7.8 kg). During this research, maximum voluntary muscle strength was assessed, by applying 2 min. isometric load, and a relaxation period into the quadriceps femoris muscle every 30 sek. Muscle strength data were recorded in (N/m). The results of this strength were recorded and assessed by computer.

Results. Our observations demonstrate that maximal voluntary strength of quadriceps femoris of adults during the workload struggled more than children's, respectively 64,2% for adults and 58,4% for the children ($p > 0,05$).

Conclusions. Maximal voluntary strength of adults during the workload reduced by 5,8 % ($P > 0,05$), more than children research participants.

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RELATIONSHIPS BETWEEN PHYSICAL ACTIVITY AND INSULIN RESISTANCE IN AGE MATCHED MALES AND FEMALES

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Introduction

The incidence of type-2 diabetes is increasing rapidly [1] and this is primarily believed to be due to increases in the prevalence of inactivity and obesity [2]. Insulin resistance is a key factor in the pathogenesis of type-2 diabetes mellitus and co-factor in the development of dyslipidaemia, hypertension and atherosclerosis [3]. Evidence on effects of gender on insulin resistance and the influence of gender on the relationships between insulin sensitivity and daily physical activity is inconsistent. **The purpose** of this study was to determine if there are any sex differences in insulin resistance and establish the extent to which insulin resistance is influenced by physical activity level in male and female.

Methods

Fasting plasma glucose and insulin concentrations were analysed in 30 female (age 38.7 ± 0.7 years; BMI 24.5 ± 0.6 kg/m²) and 30 male (age 37.6 ± 0.5 years; BMI 25.0 ± 0.5 kg/m²) subjects with no family history of diabetes who also completed a 7-day physical activity diary. Insulin resistance was estimated by using homeostasis model assessment HOMA [4]. Compendium of Physical Activities that classifies each activity by rate of energy expenditure was used to estimate energy expenditure of exercise and average daily energy expenditure [5]. The sum of skinfold thickness at four sites — biceps, triceps, subscapular and supra-iliac was used to calculate the percentage of body fat. Insulin resistance and daily energy expenditure were compared by unpaired t-test. Pearson's correlation coefficients were used to determine the relations between insulin resistance and other measures. Data are presented as means \pm SE. Statistical significance was set at p value <0.05 .

Results

There were no significant differences ($p>0.05$) between female and male subjects for fasting insulin (females 9.3 ± 0.95 μ IU/ml, males 8.6 ± 1 μ IU/ml) and insulin resistance (females 2.04 ± 0.21 , males 2.19 ± 0.24). Plasma concentration of fasting glucose was significantly higher (females 4.98 ± 0.06 mmol/l, males 5.86 ± 0.06 mmol/l, $p<0.0001$) and body fatness — lower in males than females. There were no significant differences ($p>0.05$) between female and male subjects for total energy expenditure (females 153.0 ± 4.8 kJ/kg/24h; males 154.7 ± 4.3 kJ/kg/24h) and for energy expenditure of exercise (females 6.1 ± 1.8 kJ/kg; males 6.8 ± 2.3 kJ/kg). A positive correlation between insulin resistance and body fatness ($p < 0.01$) was found in males ($r = 0.47$) and females ($r = 0.51$). There were no significant relationships between total energy expenditure, energy expenditure on exercise and insulin resistance in both groups. A negative correlation between energy expenditure of exercise and percentage of body fat was found in males ($r = -0.57$, $p < 0.001$) and females ($r = -0.38$, $p < 0.05$).

Conclusions

1. Insulin resistance and daily energy expenditure was not gender specific in the sample of age-matched subjects.

2. There were no significant correlation between total energy expenditure and insulin resistance in males and females, energy expenditure on exercises negatively correlated with body fat in both groups.

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THE INFLUENCE OF THE CHANGE OF THE CONTENT OF THE PHYSICAL TRAINING SUBJECT UPON THE PHYSICAL FITNESS OF STUDENTS

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The object of this research is the performance of physical education of students at Kaunas University of Technology.

The scientific problem is how, preparing specialists for the work activities in a technological university, to modify the performance of the physical education so that the inborn and acquired physical fitness of the students would develop possibly optimally. This encouraged studying the desires of students in the field of the physical education as well as looking for a new physical culture subject model.

The **hypothesis** of the research was based on the assumption that the programme of the subject of the physical culture in the course of the research will more influence the change of the physical fitness of students.

The **aim** of the research is to study the influence of the change of the content of the physical culture subject at the KUT on the physical fitness of students.

The following goals were raised seeking the aim of the work:

1) to analyze the evaluation of knowledge and skills of movement of the students of the KUT

2) to analyze the attitude of the students of the KUT towards the discipline of the physical culture

3) to determine the level of the physical fitness of the students of the KUT

4) to evaluate the influence of the physical education programme on the change of the physical fitness of the students of the KUT.

The results of the research showed that the knowledge of the students of faculties of KUT FHS and FDT in many issues related to the physical education is quite scarce. The study shows that the girls lack knowledge and skills forming the programme of the physical self-education, the complexes of the aerobics exercises, choosing the means to educate the physical features as well as to evaluate the personal physical development. The students also know little about the meaning of the physical preparation in the professional activity.

The results of our study absolutely coincide with the latest data of many Lithuanian researchers about the fact that two thirds of students think that the exercises of physical culture are necessary for higher schools of the university type.

The experiment physical culture programme was applied where 35 per cent of time is devoted for the sport games, 23 per cent for the aerobics, 30 per cent for the applicable exercises and 12 per cent for the physical activities in nature, had a very positive role for the change of the results of the physical fitness of students in experiment group. 80 per cent of the results of the physical fitness of the FHS group improved remarkably ($p < 0.05$). Whereas there were no improved results in the FDT group.

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SOCIAL SKILLS IN SCHOOLCHILDREN OF URBAN AND RURAL BASKETBALL SPORTS SCHOOLS

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This study is concentrated upon the investigation of schoolchildren of urban and rural basketball sports schools. Researches, which analyse schoolchildren's social behaviour in towns (large populated localities) and regions (small administrative localities), show certain differences between the tested groups according to social skills (Cartwright, Allen, 2003; Pillay, 2003). Social behaviour of urban and regional sport-exercising schoolchildren is different, too (Menifield, Rose, Homa, Brewer-Cunningham, 2001; Loucaides, Chedzoy, Bennett, 2004), however, there is no answer to the question how different is the level of social skills in these groups of sport-exercising schoolchildren. The research aim is to reveal the peculiarities of social skills of schoolchildren in urban and regional basketball sport schools.

The following methods of research were applied: basic skills inventory, situational skills questionnaire, moral skills inventory; mathematical statistics (chi-squared test). By using the principle of random serial selection, the declarative research sample was constructed out of 407 schoolchildren of urban and regional basketball schools (including 274 children from urban and 133 children from regional basketball schools).

The results draw attention to the fact that basic social skills (3.10 ± 0.37) of schoolchildren in regional basketball schools are statistically significantly ($p < 0.05$) higher than of urban schoolchildren (2.98 ± 0.47). Moreover, research results showed that higher level of certain basic social skills is characteristic to schoolchildren of regional basketball schools. Nevertheless, evaluations of urban and regional schoolchildren statistically were not different according to the following situational skills: ability to refuse, to react to remarks, to apologise, to recognise of being wrong, to be able to enjoy praise, to start a conversation, to be able to talk, to end a conversation, to ask for help. Forty to fifty percent of both urban and regional schoolchildren evaluated these social skills as average. Both urban and regional schoolchildren are characteristic of average level of moral social skills (from 41.6 to 76.3 percent). The highest percentage of low moral skills level (32.2 percent) was characteristic to children of urban basketball schools when they were assessing the skill of not pretending. Both urban and regional schoolchildren evaluated the highest the skill to keep given word (52.9 and 51.1 percent respectively). The third of urban and regional pupils indicated high level of ability not to humiliate and to bear responsibility for own actions.

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ECOTOURISM: THE IMPLEMENTATION OF STANDARDS IN PRACTICE

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Annotation. Ecotourism plays a significant role in international tourism business and in healthcare industry. According to WTO prognosis, tourism business will expand in the 21st century and the income from tourism business will have a huge input into country economy. This process will help stimulating social-economic growth in low developing countries and in distant areas. UNO announced 2002 the year of tourism and mounts.

Lots of hope is present in ecotourism, which will rationally use natural and cultural-historical tourism resources and will help to direct tourist crowds according to the presented plans.

Topicality of the article. What is ecology? What is the relation between ecology and tourism? In modern world tourism the number of employees and tourists increases. For most countries tourism business is the main economy field bringing quite a part of a state budget income. Incoming tourism strongly influences economic development of a country.

Topicality of a theme. Environmental factors influence traditional tourism development. The direct relation between tourism services and their environment is presented.

The aim is to analyze ecotourism and to understand the meaning of standard implementation in practice.

The object is ecotourism.

The objectives are: to understand the theoretical meaning of tourism and ecology, to analyze strong and weak sides of influence of ecology, to overview the possibilities of standard implementation.

Noticed problems:

- Tourism is developed in the areas with unique nature (e.g. seaside).
- Tourism is the source of income for countries and people as well as it can become the condition of biocenosis and vulnerable biological population (reef, seaside biological population) of distinction.
- Usually a small amount of money (for traveling) is used in a certain place of economy or it becomes the income of local inhabitants or local business. This process is known as the phenomena of “leakage”
- Most holidaymakers claim that it is very important that the chosen tourist travels are environmentally-friendly, travel price is motivating.
- Health and safety is priority values for tourism operators and their clients, but existing term “responsible tourism” means that well-being of ecological and local inhabitants is as important as tourism conditions.

Conclusion. It is not enough to clean the environment from mechanic, chemical, biological litter. It is rather important to clean our souls and spirit. It is not done by technical means, intellectual, scientific, creative, educational efforts and also efforts of society and its institutions are important.

THE STATE OF PHYSICAL EDUCATION IN HIGHER SCHOOLS OF LITHUANIA

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The objective. To study the changes of the paradigms of students physical training after the restoration of the independence.

Methods and organizing of the studies. The study was carried out in 2004. The information about the state of physical training was obtained after questioning the heads of physical training divisions of Lithuanian higher schools. The information was received from 14 higher schools. The first-year students were interviewed as well.

Results. The research showed quite a lot of students having health disorders come to study at higher schools: VGTU — 48%, VU — 24.4%, LŽŪU — 23%. The results of students' questionnaires showed that three quarters of the respondents would like compulsory classes, and 30% of them would like to have this possibility throughout the whole period of studies. The main reasons of not taking any physical exercises among the students are: overloaded studies (60.6%), too expensive gym services (18.2%), lack of wish and will (11.8%), being no sport facilities close to home (8.6%), family and school have not fostered the need (6%), students are interested in other forms of free-time activities.

On the other hand, only every third student has the possibility to exercise regularly at their higher school 48% can do that occasionally. However, students admit that physical culture helps to achieve better results in their studies (37.7%) and also physical training makes the studies easier (24.6%).

It was found out that in the majority of higher schools the reform of physical training is being carried out without any clear vision or scientific basis. The aims of physical training are orientated towards utilitarian and pragmatic performance of the task, thus, reflecting social but not cultural aspect. The values of physical culture are not taken into consideration. The structural content of physical education in most higher schools is one-sided, limited to bodily level, directed towards the development of physical abilities and formation of motional skills. In some higher schools the content of the education tends to be related to the professional application. In the evaluation system of physical education too little attention is paid to students' development of physical culture, evaluation and preparation of physical self-education. Informal physical training of the students is influenced by poor sport facilities in most our higher schools, the pedagogical skill of some pedagogical staff is not high. Only one third of them have academic degrees.

Physical culture is a multifunctional phenomenon that can improve not only one's health and physical state, but also satisfy other common cultural needs in the fields of education, socialization, communication and others. In a democratic society the goals of education are determined not by the society but by the spiritual needs by which the human essence subordinates bodily needs for one's aims as the material foundation of the expression of spiritual world.

Summary. In conclusion it could be stated that the department of physical training cannot efficiently solve the problem of the lack of students' physical activeness reduced compulsory amount of physical class because of poor material conditions. Everyday physical training in most higher schools is carried out without any clear conceptual theoretical basis. It is performed according to shortsighted utilitarian and pragmatic goals. Programs of physical education are discrete and lack integral attitude to educational reality. The practice of physical training is dominated by the biological side of education while the sociocultural aspect is not enough expressed.

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POSSIBILITIES OF ESTABLISHING AND DEVELOPING PSYCHOMOTORIC FACTORS OF YOUNG WOMEN'S VOLLEYBALL PLAYERS IN ONE—YEAR WORKOUT CYCLE

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The **purpose** of the work is to explore possibilities of establishing and developing psychomotor factors of young women's volleyball players in one-year workout cycle. In order to solve this problem, the following **tasks** were set:

- To explore motion velocity factors of young women's volleyball players right and left hands, depending on the complexity of exercises;
- To compare specific features both of right and left hand psychomotor reactions of the young women's volleyball players;
- To evaluate changes in response time and motion velocity during one-year workout cycle.
- To evaluate strategies of motion performance in respect of velocity.

We have carried out a study with players from the Lithuanian young women's volleyball players' team who are preparing themselves for the European Volleyball Championship. There were 17 members of the Lithuanian young women's volleyball players' team who participated in this research. The average age of players was 15.58 ± 0.12 years. The average height of players in first stage was 174 ± 0.97 cm. The average body mass of players in first stage was 58.29 ± 2.02 kg.

The research has been carried out in Laboratory of Human Motorics, of LAPE, using the analyzer DPA—1 for scientists analyse of psychomotor reaction and dynamic and kinematical characteristics. The following **methods** were used: theoretic analysis and generalization, reaction-metrics, and mathematical statistics. In the course of the study, the young women's volleyball players have been given 3 tasks to complete during these reaction timing and motion velocity tests.

The research has shown that the response speed indicators depend on the complexity of the task: the young women's volleyball players perform quick and precise motions less quickly than simple and quick motions. The values of response speed were the least in the test, where the task was just to quickly react to the shown target. The variation coefficients of response time indicators were greater than those of the response speed indicators (the range of values is between 10.0 and 14.6 percent in the case of response time indicators, and 8.90 to 9.97 percent — in the case of response speed indicators). Therefore, the dispersion of the results depends more on the response time than on the response speed. The response time indicators do not differ, whether the motions are being performed by using left hand or right hand; neither do they depend on the task complexity. The psychomotor reaction factors, in one-year workout cycle, change towards progression, though very slightly.

Conclusions

1. Young women's volleyball players choose different strategies when trying to perform tests of different complexity, as precise as possible.
2. When young women's volleyball players were given a task just to quickly react, not paying much attention to the speed of the further motion, the maximum speed turned out to be not a controllable factor, therefore its dispersion was significantly greater.

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ROLE OF MOBILITY FOR SOCIAL AND PROFESSIONAL COMPETENCE

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Developing contradictions between the ideas of social welfare and market processes, phenomena of unemployment and employment, individual and social values, caused by globalization influence problems for individual adaptation to changes. In the process of intensive change formed new understanding of activity, new structure of work and its organization and the need for new qualifications demands mobility of the employee — the ability to make decisions and act in the new type situations, implement new technologies.

In this article, on the basis of the contemporary understanding of career, there are analyzed links between social and professional competences and phenomenon of mobility, the importance of geographical, social and professional mobility on the process of individual adaptation is based. In order to implement this aim three tasks are distinguished.

Firstly the features of labor market are discussed, emphasizing their variation. It is open and beneficial for so called professional elite: recognized scientists, artist, experts, with big salary and mobility. And the market for the unqualified workforce is constrained by the barriers. This article emphasize the importance of positive attitude to continues education, permanent qualification development and retrain, as the development of professional mobility becomes essential factor, overcoming social exclusion caused by unemployment.

The second task tries to reveal the social tensions caused by changes. Sloane (1998) and Pelon (2005) state that the consequence of globalization process is the phenomenon of internationalization which can be related to geographical and social mobility. On the other hand Bauman (2005) emphasize the constraints of mobility caused by social polarization.

In this context the attitude of all life learning as the social and individual value may become crucial, while searching for means and ways empowering to overcome changes and attending stresses (N.M. Grendstad, 1984; J.H. Turner, 1987; P. Jarvis, 1999; M. Dodd, 2000). This attitude was the base for solving the third task, discussing revealed contradictions in the empirical research between formal qualifications, gained at school and competences which are required by changing labor market, political, economical and social transformations. The competence is defined as ability to act properly in a specific field of activities.

HEART STRUCTURE AND FUNCTION IN STRONGMEN VS. DISTANCE RUNNERS

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Introduction. Athletes of predominantly endurance sport are known to possess higher left ventricular (LV) mass than sedentary but otherwise healthy their contemporaries. Recent data suggest endurance athletes develop more substantial concentric myocardial hypertrophy than it was previously believed to, while this cardiac remodeling is not associated with impaired LV function. Debates continue whether regular strength training triggers more concentric cardiac adaptation than serious aerobic training does. Distance running is one of the endurance exercise modes with a high impact on cardiac dimensions. Athletes with serious participation in Strongman (*liet. galiūnu*) sport are engaged in violent physical activity during which haemodynamic pressure rather than volume overload clearly predominates during both training and competitions. The **aim** of our investigation was to compare LV structure and function of strongmen to those of distance runners.

Methods. Transthoracic two-dimensional M-mode and Doppler echocardiography was performed at rest in nine strongmen and 10 distance runners of similar age (table), sporting ambitions, career experience and training devotion. All LV size parameters were measured at end-diastole.

Results. Strongmen were almost twice as heavy as runners, who nevertheless possessed similar ($p > 0.05$) absolute LV size parameters and relative LV wall thickness (the sum of interventricular septum and LV posterior wall thickness divided by LV diameter). Interestingly, neither absolute nor relative interventricular septum thickness differed between athletes of both sports. All other relative heart size indices were bigger in runners, and diastolic LV function was worse in strongmen (table).

Parameter	Strongmen (n = 9)		Distance runners (n = 10)	
	Mean \pm 1 standard deviation	Range	Mean \pm 1 standard deviation	Range
Age, yrs	34.3 \pm 3.6	30—42	33.5 \pm 5.8	27—44
Body height, m	1.85 \pm 0.06 *	1.74—1.92	1.79 \pm 0.06	1.69—1.86
Body mass, kg	133.6 \pm 19.4 #	107—170	69.8 \pm 4.3	62—75
Body mass index, kg·m ⁻²	38.9 \pm 3.8 #	32.3—46.6	21.9 \pm 1.9	18.5—24.5
Heart rate, bpm	73.3 \pm 12.2 #	64—97	51.6 \pm 8.1	42—70
Absolute LV diameter, mm	56.1 \pm 3.9	50—61	56.3 \pm 2.5	52—60
Relative LV diameter, mm/($\sqrt{m^2}$)	35.4 \pm 2.6	31.5—40.4	41.1 \pm 2.0 #	37.6—44.0
Absolute LV posterior wall thickness, mm	11.9 \pm 0.7	10.9—12.6	11.8 \pm 1.1	10.5—14.3
Relative LV posterior wall thickness, mm/($\sqrt{m^2}$)	7.5 \pm 0.3	6.8—8.0	8.6 \pm 0.8 #	7.9—10.3
Relative LV wall thickness	0.433 \pm 0.032	0.369—0.481	0.416 \pm 0.050	0.350—0.494
LV mass, g	286.5 \pm 44.1	207.1—344.7	274.1 \pm 43.7	232.9—380.1
LV mass index, g·m ⁻²	113.4 \pm 15.7	92.2—134.8	146.2 \pm 21.8 *	125.0—199.1
E, m·s ⁻¹	0.58 \pm 0.08	0.49—0.69	0.72 \pm 0.07 *	0.61—0.80
A, m·s ⁻¹	0.57 \pm 0.11 *	0.46—0.80	0.44 \pm 0.10	0.28—0.62
E/A	1.049 \pm 0.259	0.650—1.333	1.682 \pm 0.445 *	1.258—2.750

*, # significantly (respectively, $p < 0.05$, and $p < 0.001$) higher than in another group.

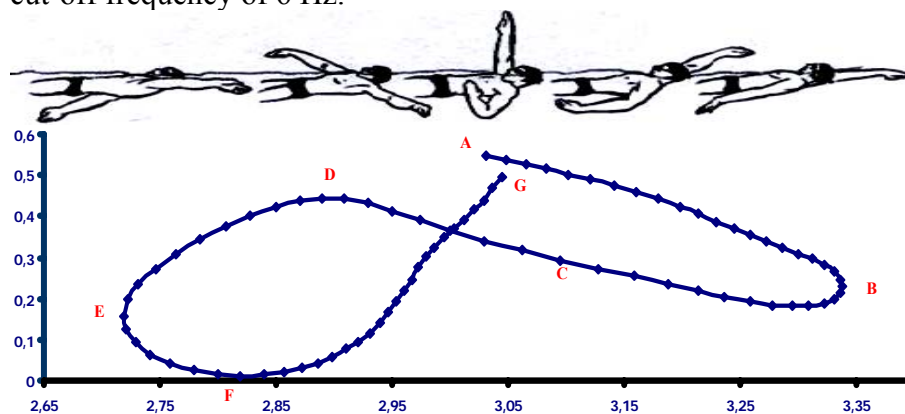
Conclusions. Strongmen have cardiac structure and absolute LV dimensions similar to those of distance runners. Runners, however, possess greater heart size in relative (to body dimensions) terms. Diastolic LV function is significantly deteriorated in strongmen (or is better preserved in distance runners). Consequently, myocardial adaptation in response to distance running seems more favorable than that to extreme weight lifting, and thus running training rather than heavy weight training should be preferred from the perspectives of cardiovascular health.

EFFECTS OF HAND-PADDLES ON UNDERWATER STROKE KINEMATICS IN BACKSTROKE SWIMMING

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The purpose of the present study was to determine the effect of two different sized hand paddles on the three — dimensional underwater stroke pattern of backstroke swimming. Swimmers use various types of strength training to increase their upper body's strength (Payton and Lauder, 1995) and consequently their swimming speed (Maglischo, 1993). The effect of hand paddles on the motor pattern of the underwater stroke were studied by Monteil and Rouard (1994), who found that hand paddles did not cause great modifications in the temporal pattern of the movement, although the total duration of the stroke was increased. However, the above researchers used two — dimensional kinematic analysis techniques, although the stroke pattern of the front crawl swimming is actually three — dimensional.

Fifteen female competitive swimmers participated in the study. Each subject swam a series of 25m trials with constant speed, without and with two different types of hand paddles. The first hand paddles had a cross sectional area of 116 cm² (small paddles) and the other 311 cm² (large paddles). The underwater motion of each subject's right arm was recorded using two S-VHS cameras, operating at 60 fields/s, which were located behind two underwater viewing windows. The spatial coordinates of selected points on the right arm were calculated using the DLT procedure with 30 control points, after the digital filtering of the raw data with a cut-off frequency of 6 Hz.



Figure

Phases of the underwater pull:
(A — B) glide,
(B — C) first downsweep,
(C — D) first upsweep,
(D — E) second downsweep,
(E — F) push
(F — G) second upsweep
(release and exit)

Data analysis revealed that when large paddles were worn, the time to complete the arm stroke ($F_{2,27} = 15.218$; $p < 0.05$), and the displacement of the hand during the glide phase ($F_{2,27} = 7.612$; $p < 0.05$) were significantly increased. The total displacement of the hip was significantly increased when large paddles were worn, while peak vertical hand speed during the upward phase was greatly reduced ($F_{2,27} = 6.367$; $p < 0.05$). The velocities of the first upsweep phase, the push phase and the second downsweep were significantly decreased.

From the results of the present study it was concluded that the large hand paddles caused significant modifications in the motor pattern of the underwater stroke and thus the size of hand paddles used seems to have a major effect in specificity of swimming training.

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PHYSICAL ACTIVITY OF LITHUANIAN SCHOOLCHILDREN

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The aim of the study was to establish physical activity of Lithuanian schoolchildren of the 5—11th grades.

Methods. Physical activity was established using the method of questionnaire. The results of the research were calculated making use of the methods of statistical analysis.

A modified IPAQ (International Physical Activity Questionnaire, Ainsworth et al., 2000) was used in the study. According to the questionnaire the duration, frequency, intensity of physical activity (PA) per week and self-evaluation of PA were established.

Prior to filling in questionnaires the students were acquainted with the aim of the study, as well as with the content of the questionnaire and the procedure of filling it in. Interview has been used as the method of questioning. The schoolchildren participated in the questioning of their own free will after receiving the consent of school administration. The research was carried out in April of 2005.

The following methods were used for the statistical description of the data obtained: frequencies and percent of nominal and rank categories of variables, means of quantitative variables, standard deviations and medians. The following statistical criteria were used: *t*-criterion, the criterion of *chi-squares* and disperse analysis. The level of statistical significance chosen for verification of statistical hypotheses was set at 0.01 (for main conclusions) and 0.05 (for preliminary conclusions of prospective character). Statistical analysis was performed by means of the SPSS package of statistical programs and Microsoft Excel program.

According to the data of the Lithuanian population census of the year 2001 the sample size of schoolchildren aged 11—18 years with respect to gender, age and dwelling-place has been established. Fourteen schools were randomly selected with the following restrictions: special schools (e.g. schools for national minorities) and schools situated clearly in the periphery of the city were excluded, also two schools from the same district of the city were not allowed to be included in the sample. The selection of the classes was not random. We selected classes, which were convenient to interview, according to the school schedule and after attaining permission from the school authorities.

The questionnaires of 1704 students (856 or 50.2% girls and 848 or 49.8% boys) have been introduced for statistical analysis.

Discussion of results. The frequency and duration of boys PA is higher than PA of girls. The frequency and duration of vigorous PA of girls and boys of upper grades is higher than that of lower grades and there are no differences between the grades as far as moderate level of PA is concerned. There is no difference between boys and girls as to the duration of time spent in sedentary occupation. Usually this period of time takes 8—9 hours per day. Health enhancing PA (moderate PA >1 hour daily; WHO, 2003) of the 5—11th grades students is typical but for 9.8% of girls and 18.6% of boys.

Student's self-evaluation of PA is better one, i.e. not correspond to existing level of their PA. There is no significant difference in the health enhancing PA of boys and girls residing in the biggest cities of Lithuania.

Conclusions. The intensity, frequency and duration of daily physical activity of the majority of Lithuanian schoolchildren, i.e. girls (90%) and boys (80%) do not correspond to the WHO (2003) recommendations related to health enhancing PA.

HOW MUCH PHYSICAL ACTIVITY IS NEEDED FOR HEALTH?

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The aim is to review the general recommendations for the proper dose of physical activity for health benefits presented in an international publications during the past few decades.

Physical activity dose is defined by the frequency, intensity and duration of activity, and the consequent total amount of activity, usually expressed in activity units per week. In order to characterize these dose elements as recommendations, the dose-response relationships of physical activity and different health outcomes need to be defined. Thus, what is the current understanding on how often, how long, what kind and what amount of physical activity is needed for different health benefits? (Oja, 2004).

There is a substantial scientific evidence that a wide variety of health benefits are provided by a physically active lifestyle. Most recent observational and intervention studies suggests differentiation in the dose-response relationships of physical activity and different health outcomes. There are a number of major questions that need to be considered.

- What is the minimal dose of physical activity required to provide a meaningful improvement in health status? While the clinician or scientist asks “How much is enough?”, the public wants to know “how little can I get away with?”
- How much more benefit is provided by larger amounts and higher intensities of activity?
- What is the physical activity recommendations for the general population as a amount of activity required for people to lead productive, but not necessarily healthy, lives continues to decrease (Haskell, 2004).

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THE EFFECT OF PEDALING RATE ON THE CARDIORESPIRATORY RESPONSE TO INCREASING WORKLOAD IN CYCLISTS

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The aim of the study was to determine the effect of pedaling rate on the cardiorespiratory response to the increasing workload in cyclists.

Subjects. 7 members of Lithuanian junior team participated in the study. Their age, height and body mass: were 18.1 ± 2.04 years, 178 ± 6.4 cm and 71.6 ± 8.4 kg, respectively.

The methods of the study. The continuously increasing exercise test with different pedaling rates (70, 90, 110 rpm) was repeated three times by each subject. After 10 min of warm-up, the initial workload (20 W) was increased by 2 W every 5 s until subject's voluntary exhaustion. After 5 minutes of the rest period the finger capillary blood samples were taken and the blood lactate was measured. The pulmonary gas exchange parameters were measured breath-by-breath using the "Oxycon Mobile" system.

Results. The means of parameters determined are presented in the table below.

Parameters	70 rpm	90 rpm	110 rpm
First ventilatory threshold (VT1), W	253.14 ± 45.38	249.14 ± 41.39	227.00 ± 46.24
HR at VT1, beats/min	164.57 ± 9.88	163.71 ± 11.67	161.55 ± 10.30
VO ₂ VeS1, l/min	3.27 ± 0.49	3.24 ± 0.41	3.25 ± 0.41
Efficiency at VT1, ml/W	11.06 ± 0.95	9.58 ± 0.93	9.67 ± 0.81
VT, W	352.86 ± 34.73	348.00 ± 44.19	320.67 ± 33.00
HR at VT, beats/min	188.05 ± 8.29	185.62 ± 8.26	179.28 ± 13.05
VO ₂ VeS1, l/min	4.18 ± 0.48	4.09 ± 0.42	4.15 ± 0.26
Efficiency at VT2, ml/W	8.84 ± 2.02	8.55 ± 0.87	9.84 ± 1.9
VO ₂ max, l/min	4.70 ± 0.40	4.63 ± 0.27	4.67 ± 0.12
VO ₂ max, ml/kg/min	66.06 ± 7.72	65.36 ± 8.39	66.43 ± 9.58
HRmax, beats/min	200.98 ± 7.77	198.10 ± 7.94	196.19 ± 8.95
VEmax, l/min	169.76 ± 12.78	168.14 ± 19.37	169.17 ± 21.48
Power max, W	451.29 ± 64.02	425.14 ± 43.28	402.00 ± 30.23
O ₂ pulse-max	38.10 ± 17.26	22.79 ± 25.96	36.33 ± 20.47
RER	1.22 ± 0.08	1.25 ± 0.05	1.31 ± 0.17
Lactate after 5 min, mmol/l	11.93 ± 2.89	12.72 ± 4.55	11.05 ± 2.50

Conclusions: 1) The parameters of aerobic capacity did not significantly differ among different testing conditions 2) The efficiency at VT1 was significantly lower while pedaling with 70 rpm, but was similar at rates 90 and 110 rpm. The efficiency at loads higher than VT1 was similar in at 70 rpm and 90 rpm but tended to decrease at 110 rpm. 3) The large inter individual differences were observed in the relationship between pedaling rate and efficiency.

THE NATIONAL SOCIAL SYSTEM OF ACTIVE AGEING POLICY IN THE CONTEXT OF THEORY OF STRUCTURAL FUNCTIONALISM

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Background. The social problem in Lithuania, the considerable increasing amount of elderly willing to be institutionalized and resigning their autonomy and independent living, raise important sociological problem, whether the active ageing policy (AAP) system is functioning in Lithuania. Our research was designed for analysis of that problem.

Purpose. To traverse the functioning of national AAP social system and reveal interconnections amongst the basic structural elements of the system on the grounds of the ideas of structural functionalism.

The **basic tasks** for realization of the goal: 1) Evaluation the conformity of the cultural model of national AAP with the ideology of WHO in the field; 2) Analysis of institutional and professional activity models and settling their concordance with the cultural context of AAP; 3) Determination of the level of real integration of social players as well as the possibilities to integrate and act in the AAP social system according to the appointed models of their activities as well as their choice in participation in the system; 4) Creation of the existing national model AAP social system with regard to our summarized results and the ideas of structural functionalism theory.

Methods. The content analysis of Lithuanian laws, national programs, formal normative documents and 15 university's study programs and the analysis the official Lithuanian statistical data. The questionnaire method was used for investigation of social care services provided in municipalities and social care institutions in order to set the level of real integration of social players (elderly people, various professionals, and volunteers) as well as the possibilities to integrate and act in the AAP social system according to the appointed models of their activities.

Results. Our investigations revealed: 1) the culture of Lithuanian AAP fully conforms to the basic cultural criteria of ideological model proposed by WHO in the field. 2) Only one governmental institution (Ministry of social affairs and labour) is integrated in AAP social system and the activity model of the institution is in line with the context of AAP cultural ideas. The institutional activity models of the other ones do not foresee the integration in the system. According to the professional activity model's context the geriatric professionals, social workers and psychologists are able to be integrated in the system. The professional activity models of the other ones do not fit to the cultural context of AAP and the integration of them in the system could be treated as incidental. 3) The home living and institutionalized services received 0.93% and 0.73% of all elderly population accordingly. The main preference for institutionalization of the elderly in social care institutions, apart the disability, is the personal request. The measuring of the level of dependence of ageing residents is unusable or unspecified. The services of professionals are deficient in the area of active ageing. The preparation of various professionals to work with ageing population in the framework of their competency is not satisfactory, because in the study programs of social workers, kinesiologists, ergotherapists, APA professionals are not enough the specific knowledge and practice. 4) On the theoretical basis of structural functionalism and the results of our study is substantiated that the active ageing social system is not working on national level, because the culture of AAP is not institutionalized in the governance institutions and a lot of professionals are not able to integrate in the institutions of social system.

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THE ANALYSIS OF THE MILITARY'S ARM PSYCHOMOTOR PROPERTIES USING THE ANALYSER DPA-1

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This research involves the analysis and evaluation of military students psychomotor processes. This was carried out using the analyser DPA — 1. This device is used for measuring dynamic parameters of independent or coordinated arm and leg movements by reacting to the target with a variety of geometric, colour or time parameters appearing on the screen. The DPA — 1 device enables scientists to analyse psychomotor reaction and dynamic and kinematical characteristics. **The goal of the research** was to identify the peculiarities of psychomotor reaction performing movements with the right and left arms. The participants of the research were 40 students ($n = 40$) of the Lithuanian Military academy. Their age was 22.03 ± 0.54 years, body mass — 76.04 ± 9.13 kg, height — 180.29 ± 7.99 cm. Their right arm was dominant.

To achieve this goal the following **tasks** had to be completed:

1. To determine the differences in psychomotor reaction by performing the moves with the dominant and non-dominant arms.
2. To determine the difference between movement speed and accuracy by performing the movement with the right and the left arms.
3. To determine the connection between the parameters of psychomotor reaction of the right and the left arms.

The hypothesis:

We think that movements performed with the dominant arm have better psychomotor qualities.

The research methods:

1. Analysis of the scientific literature resources.
2. Testing.
3. Mathematical statistics.

The results of the research showed that performing moves by the right and left arms reaction time indices did not differ ($p < 0.05$); the complexity of a task did not influence this index as well. While analysing the dependence of movement speed indices on the complexity of a task it was found out that a quick and accurate movement was performed slower than a simple quick movement. The dispersion of reaction time indices was smaller than that of movement speed indices. The complexity of a task impacted the variability of movement speed results more than the variability of reaction time results.

Conclusions

1. There were no significant differences in the psychomotor reaction time indices of the military students' movements performed with the right and the left arms.
2. Movement speed and accuracy indices did not depend on which arm performed the movement.
3. The right and the left arms correlative connection was more apparent when evaluating the accuracy index of the movement rather than speed and reaction time indices.

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