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Book of Abstracts

3rd World Scientific Congress
"Quality of Life in Interdisciplinary Approach"

Kochcice, Poland 2022

Editors
Jacek Wąsik, Janusz Szopa, Dorota Ortenburger

Book of Abstracts
These are the original abstracts submitted to 3rd World Scientific Congress “Quality of Life in Interdisciplinary Approach”, Kochcice, Poland, October 26-28, 2022

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Dear Colleagues and Friends,

It is our great pleasure to welcome you to Kochcice near Częstochowa for the 3rd World Scientific Congress “Quality of Life in Interdisciplinary Approach”, in Poland, October 26-28, 2022. The current third edition of the Congress has shown that despite the pandemic break, we have managed to activate and gather a multidisciplinary group of scientists and practitioners.

In particular, we are proud that we have authors from 17 countries as follows: ***Japan, Canada, USA, Germany, Great Britain, China, Portugal, Czech Republic, Slovakia, Ukraine, Switzerland, Bosnia and Herzegovina, Belgium, Estonia, Italy, Latvia and Poland****.*

The meeting creates the opportunity for communication and exchange of experience within the meaning of the sciences about physical education and health in the interdisciplinary approach. As the organiser, we would like the congress to become the platform to raise discussion and create common research plans.

I wish you success during your presentations.

Committe

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Program

26 October 2022, Wednesday	
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20.00 – 22.00	Social event, Sauna, SPA
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Biomechanical Analysis of Comfortability and Safety of Senior Sports Shoes under Fast Walking Conditions

Xiangdong Wang[1], Gongbing Shan[2]

School of Physical Education, Jimei University, Xiamen, China
Department of Kinesiology, University of Lethbridge, Lethbridge, Canada

Background: Comfortability and safety of footwear play an essential role in promoting senior participation in exercise, improving their balance, and reducing the risk of falls among them. This study aimed to biomechanically evaluate the functionality of geriatric sports shoes by quantitatively comparing the comfortability and safety of three commercially available ones: two popular (thin-sole & thick-sole) designs and a newly improved design. **Methods:** Sixteen male volunteers (age: 57±2 years; BMI: 25±3) participated in the study. A brisk walking pace (5 km/h) was applied for lab-based tests. The Comfortability was quantified by both subjective means, i.e. a 100mm visual analog scale (VAS) and objective means, i.e. plantar pressure measurement. The safety was quantified by parameters obtained from force measurement. The parameters are vertical peak impact force (vGRF), loading increase rate (LIR), and coefficient of friction (COF). ANOVA was applied for the statistical comparison among the three shoes. **Results:** regarding the comfortability, the thin-sole shoe and the newly-designed shoe are significantly better the thick-sole shoe in subjective evaluation ($p<0.01$). The pressure measurements revealed that the newly-designed shoe significantly decrease the peak and mean values in the metatarsal and toe areas in comparison to the other two shoes. Regarding the safety tests, in comparison to the thick-sole shoe, the other two shoes decrease vGRF and LIR significantly ($p<0.05$). Further, the newly-designed shoe has a significantly higher dynamic COF ($p<0.05$) than the other two shoes. **Conclusions:** For fast-walking, the newly-designed shoe has good performance in terms of comfortability and safety among the three shoes. It is also important to avoid shoes with thick soles when choosing footwear for elderly people.

Keywords: biomechanics, senior, sport shoes, quality of life

The Tojisha-kenkyu - importance of researching oneself by shared physical experiences on the example of Budo for disabled

Kantaro Matsui

International Budo University, President, Japan

At the social welfare facility Bethel House in Urakawa-cho, Hokkaido in 2001, a new research field called *Tojisha-Kenkyu* was established. It refers to self-support research, based on a platform of accepting that "we do not know much about ourselves". There's only a handful of translated English works from Japanese. The aim of this study is to present the potential usefulness of this approach in the case of Budo for the Disabled. The original intention of Budo was to include all potential participants in combat, regardless of their disability (for example, due to lack of limb). Therefore, Budo is fully inclusive for people with motor or mental disabilities. It could serve as an effective means of physiotherapy, increasing the physical competencies of participants. *Tojisha-Kenkyu* started as a story of a disabled boy, who attended intensive physiotherapy. He was insightful and very self-aware in researching himself through hardships of everyday routine and demanding physical rehabilitation. He shared his experience in a form of a book, which later sparked interest of scientists from the field of phenomenology to form the psychological basis of this process and establish grounds for the potential usefulness of such practice in therapy. Budo is a group practice, where physical development goes alongside mental and social ones. Encouraging practitioners to share their experiences, learn to name their hardships, and increase their awareness about their body's state, level of mastery level, or attitude towards Budo is a significant addition to a standard approach toward practice. It covers the current demands of physiotherapy, where motivation, attendance and active participation of the disabled are key factors in maintaining progress in the rehabilitation process. This additional component of physical activity does not limit to Budo or standard physiotherapy. All activities of special physical education and sport for the disabled can find such practice useful in increasing mental strength and resilience in participants.

Keywords: phenomenology, budo, martial arts, physiotherapy

Taekwondo Diplomacy Perils and a Not-so Radical Resolution

John A. Johnson

International Academic Center for Taekwondo, Wichita, KS, USA

Problem: The Republic of Korea (ROK; South Korea) and the Democratic People's Republic of Korea (DPRK; North Korea) have utilized Taekwondo demonstrations for soft diplomacy purposes for decades. Typically, World Taekwondo (WT) athletes represent the ROK, while International Taekwon-Do Federation (ITF) athletes represent the DPRK in these cultural exchanges. Despite their good intentions, the current initiative to hold competitions between their athletes ignores previous sport diplomacy theory, the organizations' successes, and hazards outlined in current sports diplomacy research. **Aim:** Building upon recent research on Taekwondo diplomacy, this paper suggests that Taekwondo actors adapt Galtung's conflict resolution theory (CRT) to avoid the pitfalls of sports diplomacy while building upon the successes of past Taekwondo cultural diplomacy efforts. **Methods:** For this qualitative study, a literature review was performed on Taekwondo diplomacy, Taekwondo philosophy, sports diplomacy, and cultural diplomacy in order to determine where these areas of study intersect. The keywords related to Taekwondo diplomacy, such as "World Taekwondo (WT)," "International Taekwon-Do Federation (ITF)," "sports diplomacy," "cultural diplomacy," "North Korean Taekwondo," and "Taekwondo demonstrations," were entered into Google Scholar and the ROK academic databases RISS (Research Information Sharing Service) and KISS (Korean studies Information Service System). Themes were identified and then codified. The themes were then analyzed and correlated with Taekwondo soft diplomacy literature. **Results:** Switching from a relationship of mutual respect and a shared cultural background to one of competition comes with risks. This study outlines the problems that currently exist in this strategy and offer a potential solution that focuses on Taekwondo's ultimate pedagogical goal: the building of peace. CRT provides a framework in which Taekwondo can be practiced differently and with respect for the differences between the peoples and cultures of the ROK and DPRK. **Conclusion:** There has been little discussion to date on the potential problems with using Taekwondo for sport diplomacy. There exists a possibly of increasing hostilities between the Korean peoples and possibly not influencing the target audience. CRT provides a framework in which Taekwondo can be practiced differently and with respect for each culture's differences. It is suggested that WT and the ITF adapt CRT from a practical peacebuilding concept to a theoretical framework for Taekwondo diplomacy. Namely, they can use it to avoid pitfalls of sports diplomacy while building upon their cultural diplomacy successes.

Keywords: Republic of Korea (ROK), Democratic People's Republic of Korea (DPRK), sports diplomacy, cultural diplomacy, martial arts, combat sports

Are PE teachers in a Spanish region satisfied with their work ?

Alberto Sanmiguel-Rodríguez

University Camilo Jose Cela, Madrid, Spain

Introduction. Job satisfaction is an important predictor of professional performance. Everyone knows the generic assumption that a happy and content worker is more productive, although the work psychology literature is not conclusive when it comes to establishing relationships between professional performance and job satisfaction. The objective of this study has been to know the reasons for the professional burnout suffered by teachers and justify the changes and abandonment of teachers. **Method.** A total of 120 Physical Education (PE) teachers who perform their function in the stages of Primary and Secondary Education in Galicia participated in the descriptive study. To obtain information, they filled out a 120-question questionnaire, prepared from the Teacher Follow- up Survey. **Results-Discussion.** 83.3% of PE teachers are satisfied with their profession. 76.7% of those surveyed show the continuous training received by different organizations and institutions as useful for the development of their work. 67.9% indicate that the lack of trust in the administration greatly influences said job change. 73% indicate that this change would be largely due to the incompetence of the administration. In general, the teaching staff indicates that the low assessment of PE by the administration greatly influences this job change. Likewise, another of the determining factors of the change in job performance is the scant consideration towards PE by families. **Conclusions.** The PE teachers of the Autonomous Community of Galicia are generally satisfied with their profession. Those who seek alternatives are mostly men in the middle of their professional career and consider changes of specialty or management jobs as a professional option.

Keywords: Professional satisfaction; physical education; teaching profession; teacher's working conditions.

Every step matters – recreational physical activity for life quality of older adults

Iuliia Pavlova

Lviv State University of Physical Culture, Ukraine

Physical activity is a "mediator" between a person's motivation for a healthy lifestyle and quality of life. It can be assumed that the decisive influence on the quality of life is not the level of physical activity at work or home but the way of spending free time, particularly exercise and sports. As a low level of physical activity is one of the main factors that negatively affect the adaptive processes in older adults and causes weight gain, osteoarthritis, cardiovascular disease, depression, and cancer, it was essential to analyze the impact of this indicator on the quality of life. Among the effects of physical activity should be mentioned not only disease prevention but also increased cognitive functioning, autonomy, anxiety reduction, and a high level of social support by creating new social networks. The study involved 200 older adults (age: 65.2 ± 4.3 years). Quality of life was assessed using the 36-Item Short Form Survey according to the following scales – physical functioning, physical role functioning, bodily pain, general health, vitality, social functioning, emotional role functioning, and mental health. The International Physical Activity Questionnaire was used to determine the level of physical activity. Participants' physical activity was analyzed at work, in the backyard, during leisure time, etc. It was found that vigorous physical activity is not a prerequisite for optimal well-being. A statistically significant correlation (r = 0.45) was found between physical functioning and vigorous physical activity. Instead, daily activities (walking, climbing stairs, housework, activity in the garden or yard) were associated with a higher quality of life. Average correlation coefficients were found between the METs spent on physical activity during work and physical functioning (r = 0.48), social activity (r = 0.54), and mental health (r = 0.43), as well as walking and general health (r = 0.71). The quality of life depends on the duration of active recreation – correlation coefficients for the physical functioning, physical role functioning, general health, social functioning, emotional role functioning, and mental health were in the range of 0.41–0.63.

Keywords: PhysAgeNet, physical activity, elderly people, health.

Psychophysiological states in persons with different levels of physical activity

Georgiy Korobeynikov[1,2], Lesia Korobeinikova[1,2], Markus Raab[2,3], Ivanna Korobeinikova[2,4]

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[2] German Sport University Cologne, Institute of Psychology, Cologne, Germany
[3] School of Applied Sciences London South Bank University, London, Great Britain
[4] Institute of Psychology of the National Academy of Educational Sciences of Ukraine, Kyiv, Ukraine

The lack of physical activity carries out to increase of tension of system of autonomic regulation and limit of functional reserves of the organism. In addition the development of psycho-emotional fatigue can provoke to a weakening of the activation of the autonomic centers of the cerebral cortex. This process is accompanied by a simultaneous increased influence of sympathetic and parasympathetic tone to the sinus node of heart. The 2020 characterized of start of pandemic COVID 19. This is infection influenced to respiratory and cardio systems and has a high mortality. Due to the forced self-isolation, there was a problem of stopping the social and economic activity. It can be predicted that due to a long break in the physical activity, most people at the end of quarantine will be in a state of disadaptation, accompanied by a disorder (defect) of the adaptive mechanisms and reduced of level of capacity. Deterioration of the psychical sphere is associated with internal anxiety and uncertainty in hypokinesia restrictions. Thus, in a long break of physical activity the most affected are along with the vegetative functions also the coordination characteristics and the psychological state of the human in the conditions of a long break of the physical activity. We opinion that the overall psychophysiological state is an integral indicator that determines the objective ability to achieving peak performance, without harming their health. That is why the elaborate the new approach to diagnostic of psychophysiological states in persons with different levels of physical activity and physical fitness will be very actually. In our future research the comprehensive system of diagnostics of psychophysiological states of persons with different levels of physical activity will be present.

Keywords: psychophysiological states, levels of physical activity, COVID pangemia

'Medicus curat natura sanat'* - nature as a key-player of immunity & longevity at Ikaria,

Agnieszka Pluto-Pradzynska[1], Grzegorz Dworacki[1], Michel Poulain[2,3]

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[2] IACCHOS Université Catholique de Louvain, Louvain-la-Neuve, Belgium;
[3] Estonian Institute for Population Studies, Tallinn University, Tallinn, Estonia.

Ikaria, the Greek island is classified as a longevity blue zone. The mountain area advantages physical activity in natural way. The organization of the dwellings is giving space for gardens. The climate and farming as a hobby or occupation creates the lifestyle based on the nature. It affects the diet contained from mellowing in the sunlight fruits and vegetables, served with huge amount of homemade olive oil. And respect to age-old practise to stop eating with stomach being full in 80 %, let citizens avoid obesity. Nature derived ligands is key-factor in stimulating the immune system and nature born signals may lower the stress level what enhanced immunesurveilance. Helpful could be lifestyle based on social relationships in communities and close to families. It supports human being in growing up and mature, learn responsibility and let the tradition be saved. Region connects people with the God and impacts on health and longevity through the meditation/relaxation in the nature admiring the wonder of creation. And thanks to the praying which are simple, centuries-old, and easily accessible technique of breathing with scientific backgrounds. Youth are naturally open and receptive; being pointed into the right direction by observation and togetherness and regionalism, can save the tradition. So promoting the value of traditional lifestyle could support they health, wellbeing and positive thinking about their ethnicity. The quoted Latin sentence, reminds us of the integrity of human with nature, the essence is not to disturb it, which is not easy nowadays. By raising awareness based on modern knowledge, it possible to improve the effectiveness of the immune system and impact on healthy and active longevity based on discovering mechanism including immune ones. Ikaria can contribute to other regions as an example to follow by nowadays providing the complex of envarimental as well as social factors.

* Hippocrates of Kos (460–377 B.C.)

Keywords: immunity, longevity, blue zones, Ikaria, nature

Increasing the efficiency of the competitive activity of elite female athletes by taking into account gender characteristics in the training process

Borysova Olha[1], Nagorna Viktoriia[1,2], Mytko Artur[1,2], Achermann Basil[2], Oberhofer Katja[2], Lorenzetti Silvio[2]

[1] National University of Ukraine on Physical Education and Sport, Ukraine
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Purpose. The goal of this study was to identify the latest technologies to improve the efficiency of the competitive activity of elite female athletes based on gender studies. Methods: bibliometric techniques; method of expert surveying and evaluation was used to determine the modern problems of women's elite sports (n=160); the indicators of the efficiency of attention, volume of voluntary attention, productivity, coefficients of motivational, volitional and typological components, stress resistance (women, n = 17; men, n = 24); mathematical and statistical processing and data analysis. Results: The method of expert evaluations (n=160) made it possible to determine the main problem of today's elite women's sports, namely: the use of male models of special physical training in the training process for female athletes. And a significant gap in knowledge regarding the gender characteristics of athletes` speed-strength training has a particularly critical impact on the effectiveness of their competitive performance. Our studies of psychophysiological indicators of elite athletes for both genders serve as a clear example of the relevance of innovative developments in load planning and methods of performing special exercises to improve speed and strength training. Conclusions. It is shown that gender-specific issues regarding women's elite sports remain in various countries of the world. We determined that the psychophysiological state in male athletes is formed due to increased attention and speed of the sensorimotor response. In female athletes, in contrast, the psychophysiological state can be expressed by the ratio: speed and productivity of information processing - properties of the main nervous processes - attention. Taking these gender differences into account for planning loads in special physical training is expected to have a positive effect on the athlete's performance in competitive sports.

Keywords: elite female athletes; gender characteristics; speed and strength training.

Diagnostic and therapeutic algorithm for the treatment of scoliosis, according to the concept of the spine reflex balance (SRB) - preliminary treatment results

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Introduction: The aim of the study is to assess the effectiveness of the scoliosis early diagnosis and treatment algorithm according to a new concept. **Material and methods:** The results of patients treated for posture defect and / or back asymmetry were analyzed. The study group consisted of 830 children aged 6-17, mean age 10.65 (SD ± 3.15), 542 girls (65.3%) and 288 boys (34.7%). The inclusion criterion: the angle of truck inclination ≥ 3 ° or Hump sum ATI ≥ 8 ° and the absence of congenital anomalies and neurological diseases. The study examined: angle of truck inclination, thoracic kyphosis, lumbar lordosis, functional length of lower limbs and lower limb statics. The group was divided into two subgroups A - with idiopathic scoliosis with Cobb angle ≥ 10 ° and these constituted 33.1% (n = 275) and subgroup B - children with back asymmetry without X-ray and these were 66.9% (n = 555). For both subgroups, the results before and after treatment were compared and statistically analyzed. **Results:** In group A, the angle of truck inclination after treatment decreased from the mean value of 6.17 ° (SD ± 2.57) to 5.44 ° (SD ± 2.82), and the difference was statistically significant at $p<0.001$. Regarding the post-treatment cobba angle, the range decreased from 3-71 ° to 4.5-64.5° while the mean cobba angle increased from 18.82 ° (SD ± 9.83) to 20.87 ° (SD ±10.45). In group B, the angle of truck inclination after treatment decreased from the mean value of 4.76 ° (SD ± 1.4) to the value of 3.73 ° (SD ± 1.58), the difference was statistically significant $p<0.001$. **Conclusions:** For idiopathic scoliosis children, our algorithm can effectively control or reduce curve progression.

Keywords: scoliosis, back asymmetry, faulty body posture. specific exercise,

The use of virtual reality in the training of table tennis players - comparison of muscle activation of selected muscles of the upper limb during strokes in virtual reality and in a normal environment

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Objective: The objective of the work was to determine the degree of agreement between the involvement of selected muscles of the upper limb in table tennis players during training in virtual reality and in a common environment. **Material and methods:** The research was carried out on a deliberately selected sample of ten high-performance probands in table tennis. We monitored the activity of four selected muscles during two basic types of strokes(backhand and forehand topspin). The study evaluates differences in the magnitude of muscle activation in different types of environments (VR and regular training environments). A device (Noraxon, MB 3.18 - myoMUSCLE™) was used to acquire data, which is used to measure and then evaluate muscle activation using surface electromyography. Furthermore, the Eleven Table Tennis on Steam program (HTC Vive Pro Eye glasses) was chosen for the virtual reality training environment, and the Joola Table Tennis Buddy Pro ball serving robot was used for the common training environment. **Results:** Based on our results, we believe that there is no agreement between table tennis strokes in a normal environment and in virtual reality. The selected muscles experienced significantly higher loads when playing in the normal environment than in virtual reality. Another interesting thing is that from the point of view of the involvement of the individual muscles, the forces during the stroke are distributed over all the muscles and not a single muscle can be described the main muscle. **Conclusion**: Based on the results obtained, we can recommend the game of table tennis in a virtual environment to beginners or just for fun, rather than as a suitable training tool for players of a performance level.

Keywords: Virtual reality, muscle activation, surface electromyography, training, table tennis.

The research was carried out within the project UJEP-SGS-2022-43-006-2

Sedentary behavior in relation to selected indicators of movement and characteristics of children in the lower-secondary school

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Purpose: Sedentary behavior (SB) of adolescents is often associated with warning signs of emerging civilization diseases and reduced participation in physical activities (PA). Although some studies point out that SB does not necessarily mean avoiding PA, the opinion of the public prevails, that in addition to the time devoted to sitting during school lessons, the time spent watching monitors and screens is constantly increasing at the expense of PA. Our goal was to determine the indicators of the participation of lower-secondary school students in voluntary SB and to relate them to selected characteristics of their movement behavior or evaluate them from the point of view of compliance with medically recommended criteria. **Material & Methods:** The research was carried out using objective and subjective measurement techniques during a two-year period with pupils of the lower-secondary schools in the Ústí Region (N = 512). A record sheet was used to record data on time indicators of participation in physical and SB and basic anthropometric characteristics. Physical activity was monitored by the Yamax SW-700 and SW-800 pedometer for 7 consecutive days, i.e., during regular school days and weekend days. **Results:** In daily values of time spent in SB, boys surpass girls. Both boys and girls spend more time voluntarily sitting in front of monitors and mobile phones on weekends than on school days (M BW = 162.0 ± 141.4 min. × M BSD = 129.0 ± 109.8 min.; M GW = 133.0 ± 118.1 min. × M GSD = 121.0 ± 110.1 min.). The time values of weekend days show statistical differences between boys and girls (p = 0.02). As pupils age, the time spent on SB increases. In connection with the volume of voluntary SB, neither the mutual relationship of the time of participation in PA (r = -0.006, p = 0.90) nor the volume of locomotor activities (r = -0.058, p = 0.199) was confirmed. **Conclusion:** The obtained data confirm the increased level of SB in relation to the recommended criteria. In proportion to the reported time of participation in PA or locomotion indicators, it is not sufficiently compensated. However, in many individuals this behavior is well beyond the tolerated recommended values.

Keywords: adolescent, lifestyle, sedentary behavior, step counts, pedometers

Effectiveness of implementation of the FitCurves «Weight Management» program on the physical development of women aged 30-50

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The analysis of the scientific literature on the researched problem proved that the indicators the physical condition of women of mature age tends to decrease, which is determined insufficient level of motor activity, significant physical and mental stress, irrational nutrition and non-observance of a healthy lifestyle. Issues of development and application of physical culture and wellness systems, a variety of wellness fitness tools to stabilize the physical and mental state women's health are becoming relevant. One of these methods of improving the physical and psycho-emotional state of mature women is the FitCurves system. In order to improve health and eliminate excess weight, women were offered to participate in the «Weight Management» program within the FitCurves health system. Research results claim that the FitCurves program in combination with the «Weight Management» nutrition program has a positive effect on body weight correction. Among women who completed the specified program, the indicators of the girth of the abdomen, waist, pelvis and hips decreased by a greater percentage (28%) than the indicators of the girth of the chest and biceps (19%). Analyzing the percentages of muscle and fat, it was determined that muscle mass in the main group increased by 0.9% compared to control women, whose muscle mass increased by only 0.7%, while fat the mass in the main group decreased by 4.7%, and in the control group by only 1.5%. The stability of the obtained results of body weight reduction in mature women who have completed the «Weight Management» program depends on further adherence to the regimen of physical activity and nutrition, sleep and healthy habits, and avoidance of stressful situations. Analysis of the physical development of women who underwent the «Weight Management» program indicates that the return of weight to the initial indicators is typical for most women, which is explained by psychological factors of everyday life and a characteristic decrease in the effect of metabolic processes with age. We believe that the effectiveness of body weight correction programs should be combined with psychological measures aimed at increasing motivation to exercise, maintaining a diet, and eliminating stressful situations.

Keywords: women, weight, exercise, nutrition

Characteristic features of individual fitness programs for women in the first period of mature age

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Introduction. An ambiguous situation, where there is a trend towards deteriorating women's physical health in the first period of their mature age needs the implementation of measures, dealing with the development of the situation. The reproduction of genetic capital depends on women of the above-mentioned age group. According to specialists in various fields an untimely reduce of women's physical health in their reproductive age is due to several factors, namely unhealthy diet, sedentary lifestyle and so on. The aim of the study was to systematize information concerning the characteristics of women's physical health in the first period of their mature age in the process of fitness classes depending on body type. **Methods.** The study is based on methods of mathematical statistics, analysis and generalization of research literature, systematization and anthropometry. **Results.** The study involved 46 women of the first period of mature age who are active in fitness, among which 58.7 % (n=27) aged 26-30, 23.9 % (n=11) under 25, 17.4 % (n=8) over 30. The main purpose of results is to determine the advantage of number of women with harmonious physical development among the research participants. The majority of women was characterized by normosthenic constitution according to their body types. The study shows that in accordance with the form of thorax the dolichomorphic body type is observed in asthenic women, the mesomorphic body type is observed in women of the normosthenic constitution, the brachymorphic body type is observed in women of the hypersthenic type. Nevertheless, in the ratio of body mass to height, the women of the asthenic body type are underweight and the weight of the women of the normosthenic and hypersthenic body types is within normal parameters. These specific features should be considered in setting the tools of influencing while healthful fitness classes. We proposed strength fitness programs in order to change the body type and lose or put on weight. Strength exercises aimed at weight gain, shaping the body, improvements in muscle tone we recommended for the women of the asthenic body type which are characterized by slight constitution, tall stature, narrow shoulders, skinny extremities and low weight. Women of the hypersthenic body type are characterized by massive constitution, average height, bulky shoulders, short extremities and overweight. That is why the exercises for these group of women were aimed at body weight gain, the reduction of body circumference, the decrease in amount of fat. Women of the hypersthenic body type have relatively proportional body type. Therefore, physical activities were aimed at improvements in muscle tone, reduction of weight gain and the circumference of pelvis. **Conclusion.** Regarding to the fact that the main emphasis of investigation was placed on the improvement of theoretical basis and the pilot testing of setting individual fitness programs efficiency taking into account morphofunctional features, motivation and women's body types in the process of self-contained exercising as a determining factor of preservation of health, the research has important implication, which determines the direction of the scientific approaches for chosen field in the future.

Keywords: women of the first period of mature age, fitness programs, body types.

Features of the functional capabilities and properties of the nervous system of students of the faculties of primary and preschool education of pedagogical universities

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Background and purpose. It is necessary to identify functional features and genetically determined properties of the nervous system for teachers of primary and preschool education to select recommendations for the use of physical education tools for them. Purpose: to determine peculiarities of the work of the nervous system according to psychophysiological indicators and peculiarities of the functional capabilities of students - future specialists in the field of primary and preschool education. On the basis of the identified features, make recommendations regarding physical education and sports. **Material and methods.** 812 students of pedagogical institutions of higher education of Ukraine took part in the study, of which 88 were students of the faculty of primary education, 93 were students of the faculty of preschool education. Psychophysiological testing was carried in the following modes: determining the speed of a simple visual-motor reaction, determining the speed of a choice of two elements out of three. Orthostatic reactions were determined by the results of heart rate in the lying position and in the standing position. **Results.** Students – future specialists in elementary and preschool education have a more mobile and less durable nervous system compared to students of other faculties ($p<0.001$; $p<0.01$; $p<0.05$). Indicators of functional capabilities according to the results of the orthostatic test in future specialists in preschool and primary education differ significantly only from these indicators in students of the faculty of physical education in the direction of reduced capabilities of vegetative-vascular regulation ($p<0.05$). **Conclusions.** Recommendations for the use of physical exercises by students of the faculties of elementary education, preschool education of pedagogical universities - to use more mobile games. Sports games, martial arts, short-distance running, jumping, dancing, and various outdoor exercises are most suitable for them.

Keywords: orthostatic test, reaction speed, university students, primary education, preschool Education

Combining the development of intelligence and strengthening the health of future teachers in humanitarian specialties

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Background and purpose. Today 's student population is a significant part of future highly qualified specialists in various branches of the national economy. But the real situation that has developed in our country with the health of student youth in general and, in particular, of future teachers, gives rise to a practical need to find effective means of improving physical culture. An increase in mental and mental loads without their optimal compensation with physical activity leads to a significant deterioration of the general state of health. Purpose: on the basis of a review of the literature, to plan means for use in the physical education of students of humanitarian specialties. **Material and methods.** 1273 literary sources on the selected topic from the scientometric databases Scopus and Web of Science were analyzed, of which 134 were selected for review. Sources were selected using the keywords "students", humanities", "physical education", "sports". Preference was given to sources from the last 2 years. **Results.** It was found that for all the obvious need for motor activity, the question remains open as to which means of physical activity are the best for future teachers - specialists in humanitarian specialties. At the same time, it is necessary that the means used not only increase the level of physical fitness, and, accordingly, the level of health, but also contribute to the professional growth of future teachers. The system of means used to improve the physical fitness of students should have a spectrum of versatile actions, be attractive to student youth. Health aerobics meets these requirements to a large extent. Being an integral part of health-improving physical culture, aerobics is attractive to girls, has great aesthetic potential, has a comprehensive and positive effect on the body, provides correction of the figure, and reduces deficiencies in general physical development. **Conclusions.** It is planned to use aerobics in the author's modification as the main direction for physical education classes. A feature of the developed methodology is to emphasize the development of students'; functional readiness in combination with the development of visual perception. It is assumed that the use of aerobics in the author's modifications will have a positive effect on the functional state of students.

Keywords: students, humanitarian specialties, physical education

Technologies for strengthening and preserving the health of future teachers of art specialties

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Background and purpose. The formation of a healthy lifestyle of future teachers is generally of great importance for society. Specialists in creative specialties occupy a special place among future teachers. Purpose: on the basis of a review of the literature, determine the most effective means for the physical education of future pedagogical specialists in creative specialties. **Materials and methods.** 1443 literary sources on the selected topic from the databases Scopus and Web of Science were analyzed, of which 207 were selected for review. Sources were selected using the keywords "students", "art", "physical education", "sports". Preference was given to sources from the last 2 years. **Results.** It was determined that future teachers must overcome all the difficulties of studying at the university. Among future teachers, a special place is occupied by specialists in creative specialties - musicians and artists. Their professional work is characterized by an insufficient level of physical activity of a dynamic nature in combination with a large static load and highly coordinated work of the fingers. **Conclusions.** It is necessary to choose such classes in physical culture and sports, which would be organically combined with the main type of activity, and help to improve in the chosen art form. For this purpose, any exercises that will please future teachers of creative specialties are suitable. Walks and trips deserve special attention. After all, they develop endurance, and, accordingly, the cardiovascular system - the main factor of health. In addition, during walks you can observe the beauty of nature or the city. It is most suitable for representatives of creative specialties as appreciators of beauty. You can also do various types of aerobics, moving and sports games, cycle sports, etc. And in order to determine the characteristics of an individual approach to each future specialist, it is necessary to identify their psychophysiological capabilities, which is what we plan in our future work.

Keywords: pedagogy, art, physical culture, students

Subjective well-being of performance and elite athletes - narrative study of focus groups

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Subjective well-being (SWB) is one of the main indicators of quality of life. It emphasizes the subjective nature of happiness and considers people to be the best judges of their own happiness. Our research was based on the approach to the SWB by Edward. Diener and his team of authors. This concept of SWB consists of emotional and cognitive domains such as experiencing frequent pleasant feelings, infrequent unpleasant feelings, and the overall judgment that life is satisfactory. Needs whose fulfillment leads to personal growth and development saturate the flourishing domain. Sport activities as a source of a person's fulfillment can represent the completion of our self- knowledge, self-image, self-confidence, self-realization in life and also dominance or professionalization. It is a particular challenge for top athletes to protect and stimulate their SWB even in a highly demanding and performance-oriented competitive context. This also applies to the performance environment, but not infrequently also to recreational sports, where, for example, a growing dependence on a regular dose of sports training can turn into a pathological phenomenon. The goal of this pilot research was to qualitatively identify the specifics of SWB experienced by athletes in their environment from the point of view of social-psychological functioning, e.g. meaningfulness, supportive relationships, commitment, competence, self-acceptance and personal growth. During April and May 2022, 4 focus groups were held in the two regional capitals in Slovakia, specifically in Košice and Banská Bystrica (17 men and 10 women on average, age = 22.8). The participants were mainly active male and female athletes engaged in competitive and top levels of performance: football, weightlifting, athletics, triathlon, shooting and tennis. Athletes described well-being as a feeling of inner satisfaction, encompassing most aspects of a happy life. In the context of playing sports, the athletes were mainly aware of the intensity and frequency of both positive and negative emotions. Furthermore, they strongly perceived the importance of connecting SWB with other areas that they experience, such as self-acceptance, self-development, meaning in life and personal development. This study pointed out the importance of working with the topic of SWB directly in the athlete's environment. Acknowledgment: This work is part of the scientific grant project "Validation of scales of subjective well-being for the needs of Slovak sports practice: SWLS, SPANE and FS" No. vvgs-2021- 1857.

Keywords: Focus groups, sport, life satisfaction, positive and negative experience, flourishing

Martial arts modules at physical education lessons in modern Ukrainian school

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Physical education lessons in a modern Ukrainian school are conducted according to the curriculum, which is built on a modular system. Almost every sport can be presented in the form of a variable module. Specialists in physical education can develop their own variable modules for this program. The criteria for the selection of variable modules are: availability of material and technical base, regional sports traditions, staffing and desire of pupils and students (Curriculum of physical education for general educational institutions of 5-9 grades (approved by the order of the Ministry of Education and Science of Ukraine dated 23.10.2017 № 1407); Model curriculum «Physical Culture. 5-6 classes» for general secondary education institutions (approved by the order of the Ministry of Education and Science of Ukraine dated 17.08.2022 № 752)). It is relevant to introduce martial arts as variable modules in the physical education curriculum for secondary schools and study their impact on the development of students of different ages. Another interesting direction is the use of specialized outdoor games in the lessons of these modules, which are widely used in martial arts. They can be used to develop the physical qualities of students, moral and volitional training, the formation of motor skills, etc. Modern trends in physical education in secondary schools require teachers to find new means and methods to expand the motor experience of students. This can be achieved through the targeted use of specialized outdoor games with elements of martial arts using fitballs. Analysing the above, we can conclude that the use of specialized outdoor games in physical education lessons of secondary schools during martial arts modules is a very relevant and interesting area of research.

Keywords: physical culture, martial arts, outdoor games, module, training

Preventive Technologies of Physical Education of Students with Musculoskeletal Functional Disorders

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Summarizing the data of the scientific papers it is possible to talk about a considerable quantity of researches concerning the prevention of the posture disorders of student in the process of physical education. Our technology of the correction of the students posture disorders consist of such components: global, socio-pedagogical, personal and biological and taking into account the state of its biogeometric profile and somatic type. The criteria for the effectiveness of the technology include the analysis of the level of the posture biogeometric profile, body goniometry and physical fitness of students. The technology consists of the preparatory, correctional, supportive stages, including 5 blocks of physical exercises and the information-methodical system "Perfectum Corpus". The content of the multimedia system is a structured in few modules. The theoretical module "Have to Know" includes the following information: "Healthy Lifestyle", "Healthy Body, Healthy Mind", "Monitoring". The module "Practice" contains data how to use athletics exercises, taking into account the body type and the state of the biogeometric profile of the students' posture. The bonus module of the multimedia system includes next elements: "Interesting Videos", "Internet Resources", "Types of Motor Activity". After formative experiment it was established that the means and methods used in the technology had a positive effect on the change in the distribution of posture types. In particular, the number of students with normal posture increased among students with ectomorphic, mesomorphic and endomorphic somatotypes. Statistically significant changes in student's fitness level are a confirmation of the effectiveness of the technology for correcting posture disorders. In particular, increased the level of trunk muscle endurance; upper limbs and back; spine flexibility, mobility of the hip joints and elasticity of the hamstrings, body static balance regardless of somatotype. The results obtained during the formative experiments shown the effectiveness of correctional and prophylactic technologies in the physical education of students with the functional disorders of the musculoskeletal system. This makes it possible to positively acts on formation of students' methodical abilities and skills, and in addition, to maintain the optimal state of the biogeometric profile as an important component of somatic health.

Keywords: physical education, correctional and prophylactic technologies, student, disorder, biogeometric profile of posture.

Individual And Differentiated Planning Of Health Physical Fitness With 60–70 Year Old Men

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At present active scientific research is being conducted aimed at improving the elderly's quality of life, improving their health and maintaining physical and mental capacity at the level that would allow them not only to take care of themselves, but also to be active members of society. Thereby, we have developed programs to improve the physical state level as one of the indicators of the life quality of 60-70 year old men. The content filling of health improving classes with this contingent was carried out taking into account their different motor activity. The main requirements for health physical fitness classes were the prevention of major diseases; prevention of cardiovascular system diseases; recovering of the musculoskeletal system functioning; improving the sensor systems; increase in strength and coordination; relieving stress, improving mood and well-being. There were developed the main methodological principles of health for the elderly, structural and functional preservation and maintenance of positive emotions intelligence and the efficiency of body systems in general; individual adaptability of 60–70 year old men to the physical and social environment; preservation of optimal well-being; motivation of any behavior forms through the values of life as the main human factor. In accordance with the physical state level and real motor activity level, three programs of classes with 60-70 year old men were developed: - the "minimum" program included morning gymnastics and daytime exercises for joints, strength exercises, evening walks in increments up to 20–30 minutes; total motor activity is 6–7 hours per week; - the "medium" program additionally included exercises for the prostatitis prevention, alternating running with walking, meditative exercises aimed at internal organs regulating; total motor activity is 10–14 hours per week; - the "maximum" program additionally included running for up to 30 minutes, active strength gymnastics, exercises to strengthen internal organs, breathing exercises and exercises to prevent aging (in-depth relaxation program); total physical activity is 15–20 hours per week. The proposed methods based on individual and differentiated planning of health improving activities for 60-70 year old men have shown their effectiveness at pilot experiment stage.

Keywords: old age, males, quality of life, motor activity

The effect of 8-week multicomponent intervention on physical fitness in trained older women

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This study aims to assess the effect of multicomponent intervention on physical fitness in older women. A total of 25 physically active women over 60 years of age completed an 8-week multicomponent training programme (2 times/week, 60 minutes) focused on aerobic endurance, strength, and dynamic balance. Senior Fitness Test battery was used to test their functional performance before and after the intervention. Training resulted in a statistically significant improvement in the 2-minute step test ($p=0.007$). Moreover, the Body mass index significantly decreased after the training ($p=0.037$). Surprisingly, significantly prolonged time in the Foot up and go test ($p=0.011$) was observed after the training. The 8-week multicomponent training programme seems to be an effective tool for increasing aerobic endurance in physically active older women. This training does not contribute to the significant improvement of other abilities.

Keywords: aerobic endurance, lower limb strength, balance, flexibility, Senior Fitness Test

Effect of visual intervention on the multistage 20 metre shuttle run test performance in children aged 12-15

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The multistage 20 m shuttle run test (MSRT) was designed to determine the maximal aerobic power of schoolchildren, healthy adults, and athletes. A number of authors, as well as the author of the test himself agree, that motivation is an important factor that influences the test result. They emphasized that lack of motivation can lead to termination of the test before participants reach physiological limits. The aim of the present study was to examine the influence of visual intervention on the levels of performance on this endurance field test. Material & Methods: 138 pupils, boys (81) and girls (57), 12-15 years old were divided into two similar groups. One group (A) took MSRT with visual intervention; the other group (B) took the standard test according to Leger's methodology. Visual intervention consisted of simultaneously projecting an animated running avatar onto the gym wall. The children in this group could also derive their pace through visual control of the movement of the avatar. Subsequently, after two weeks, group B also took the second test, this time with visual intervention. Results: Test for independent samples (number of phases): Group A (test with intervention): n = 69, Mean = 6.64, SD = 2.45. Group B (test without intervention): n = 69, Mean = 4.08, SD = 1.52. Mean difference = 2.56, SE 0.34, effect size (Cohen's d) = 1.25, 95% CI= 0.86 - 1.64. Test for dependent samples: Group B (test without intervention): the same as above. Group B (test with intervention): n = 69, Mean = 6.88, SD = 2.41. Mean difference = 2.80, SE 0.13, effect size (Cohen's d) = 2.63, 95% CI = 2.12 - 3.12. Conclusion: Significant differences in results in favour of a form of test with visual intervention point to limits on validity of the MSMT. It is optimal and necessary to motivate participants when performing the test. Helping to keep up with the rhythm and pace of the run, especially in the early stages of the test, is also an issue.

Keywords: Children, Endurance, Intrinsic motivation, Multistage 20 m shuttle run.

Physical and sport education participating in qualitative changes in muscular system of female students

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The aim of research was to verify influence of physical program on selected factors of musculoskeletal system in the secondary school students in physical and sport education, in terms of content change. Material and methods: The monitored group consisted of 17 adolescent aged girls (years old 17.21±0.32, body height 168.17±7.33 cm and body weight 61.61±6,54 kg) and from the town Trenčín. Results: The realized physical program within the physical and sport education and in terms of changes in its content indicated positive changes in selected factors of the musculoskeletal system. Significant ($p<0.05$) improvement was recorded in overall body posture of female students, significantly ($p<0.05$) was improved the physiological curvature of spine in cervical and lumbar spine, as well as the dynamic spine function, as was evidenced by ($p<0.05$) resupts of Thomayer's, Schober's, Stiborv and Otto's tests and lateroflexia. Conclusions: The experimental verification of the outlined "intensification factor" in teaching of the physical and sport education in secondary school is the knowledge and basis for the theory and practice of school physical and sport education in cooperation with the health physical education.

Keywords: Musculoskeletal system. Physical program. Physical and sport education. Student.

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A Simple and Affordable Way to Monitor 24-hour Physical Activity Patterns with Consumer Wearables

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Physical activity (PA) is essential in preventing diseases (cardiovascular disease, diabetes, colon cancer). It also positively influences the level of mental health and delays the onset of dementia. On the other hand, sedentary behavior (SB) is associated with an increased incidence of cardiovascular disease, cancer, and other disease leading to mortality. Therefore, it is clear that supporting PA and promoting PA recommendations is crucial. Many studies confirmed that many adolescents do not follow these recommendations. Therefore, it is necessary to monitor the 24-hour PA behavior of adolescents and find out the segments of the day in which PA is neglected, and target these segments with PA interventions which could lead to an overall increase in the daily volume of PA. These facts lead to the need to simply and efficiently monitor the PA behavior of individuals with sure time accuracy. Already implemented studies monitoring movement behavior are based on several-day monitoring of an individual using reliable and valid pedometers or accelerometers. Although using pedometers is a very effective and inexpensive solution, it usually does not allow simple monitoring of PA in individual parts of the day. On the other hand, accelerometers can monitor the trend of PA during the day, but they are pricy. Our work aims to present the possibilities of a simple and inexpensive solution that allows monitoring the 24-hour PA behavior of the population. The presented solution is based on the open-source Gadgetbridge application for Android devices, which enables the synchronization of many consumer-based smart fitness trackers. Furthermore, we use the application with wearables Xiaomi Mi Band (version 4–7). The advantage of these devices is the ability to monitor PA (steps count) in minute intervals, as well as battery life (14–20 days), device memory (14+ days), and, above all, their price. However, we consider the efficiency of processing the results to be an essential aspect of our solution as data from smart bracelets can be easily synchronized to the service device, where they are then stored in a commonly used database file. Acknowledgement: This study was supported by research grant UJEP-SGS-2022-43-008-2.

Keywords: Gadgetbridge, Mi Band, sedentary behavior, step counts

The sport of football in the Stanisławów and Tarnopolskie voivodships in the years 1920-1939

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Clubs and societies from the Stanisławów voivodeship that ran football sections were part of the Lviv Regional Football Association (Lviv OZPN). As of 1930, 19 clubs and societies running football sections belonged to the Lviv OZPN - from the area of the Stanisławów voivodship. A turning point in the history of football in Stanisławów is 1933. This year, Stanisławowski OZPN was established. The Stanisławowski OZPN was joined by 6 clubs and sports societies, running a football section, incl. from the following towns: Kopyczyńce, Nadwórna, Stanisławów. The best teams in the Stanisławów Voivodeship were: Rewera Stanisławów, Strzelec Górka Stanisławów, and Pogoń Stryj. The players of Rewera and Strzelce Górka fought in the play-off games for promotion to the national league. The most successful team was Rewery Stanisławów in 1934. Rewera won the first round of play- offs for the national league. 18 football sections of clubs and sports societies participated in the league games of the Lviv OZPN from the Tarnopol voivodeship - in the years 1921-1939. The best football teams include: Kresy Tarnopol, Janina Złoczów, Jehuda Tarnopol, the Jewish Sports Club Złoczów and Podilla Tarnopol. For the first time in the season of 1935, A class games in the Tarnopol sub-district were held. The games were attended by the teams of Janina Złoczów, Jehuda Tarnopol, Podilla Tarnopol and Kresy Tarnopol. The players of Jehuda Tarnopol became the champion of the Tarnopol sub-district.

Keywords: Lviv Regional Football Association, Tarnopolskie voivodships, Stanisławów voivodships

Study of the impact of health-improving gymnastics XADU on the health and functional state of women aged 45-55 with osteochondrosis of the spine

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Introduction. In this, the influence of HADU health-improving gymnastics on the subjective assessment of the pain syndrome and the functional state of women of the second mature age with osteochondrosis of the spine was evaluated. **Material and methods**. The study involved 45 women diagnosed with stage 1-2 osteochondrosis of the spine, divided into 2 groups. The control group of 22 people was engaged in the method of exercise therapy, the experimental group of 23 people was engaged in health-improving gymnastics of HADU. The study used methods of theoretical analysis, functional tests (assessment of backward flexibility of the spinal column; assessment of static strength endurance of back muscles; assessment of endurance of back muscles to dynamic load), pedagogical experiment, methods of mathematical statistics. **Results.** The study showed that the use of recreational gymnastics XADU in the program of physical rehabilitation of women aged 45-50 with osteochondrosis of I and II degrees contributes to a more effective and early restoration of the functional state, which is expressed in a statistically significant ($p<0.05$) increase in the mobility of the spinal column by 20.5% in the experimental group compared to the control; static endurance of back muscles by 11.2%; dynamic endurance of back muscles by 17.8%; as well as reducing the severity of pain by 31.2%. A decrease in the level of pain syndrome by 34.3% was found. **Conclusions.** The use of HADU health-improving gymnastics for the treatment of osteochondrosis has shown its effectiveness.

Keywords: women of mature age, HADU, functional state, osteochondrosis, spine

Influence of exercises using the light training flashlight simulator on indicators of sensorimotor reactions of table tennis athletes

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Introduction: Athletes of game sports need a high level of manifestation of psychophysiological functions. Training and competitive activity in table tennis contributes to the formation of a complex of specific reactions and perceptions in athletes. **Purpose**: to establish the influence of exercises using the Light training flashlight simulator on the indicators of sensorimotor reactions of table tennis athletes. **Methods**: theoretical analysis of literature data, psychophysiological research methods, pedagogical experiment, methods of mathematical statistics. The study involved 23 tennis players 11-12 years old, who formed the main and control groups. **Results:** It was found that the use of the exercise system using the Light training flashlight simulator had a positive effect on the indicators of the sensorimotor reactions of the athletes of the main group ($t=3.02$; $p<0.01$). Comparison of ANOVA variances ($F=3.84$; $p<0.01$) in athletes from the main and control groups indicates that the system of exercises using the Light training flashlight simulator had a greater effect on the development of sensorimotor reactions in tennis players than the standard program. **Conclusions:** The study indicates a positive effect of the exercise system with the use of the Light training flashlight simulator on the indicators of sensory-motor reactions of tennis players, and, as a consequence, on the level of confidence in their actions, looseness in movements during the game.

Keywords: table tennis, sensorimotor reactions, simulator Light training flashlight, tennis players.

The influence of ultimate frisbee exercises on the level of physical fitness of 15-16-year-old pupils

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Introduction: The presented research determined the influence of an innovative type of motor activity ultimate frisbee on the level of physical fitness of pupils. **Material and methods:** The study was conducted based on the general secondary education institution in Kharkiv. 105 pupils 15-16 years old took part in it. The following methods were used during the research: theoretical analysis and generalization of scientific and methodical literature, pedagogical testing, pedagogical experiment, and methods of mathematical statistics. The level of physical fitness of pupils w determined by the indicators of development of coordination abilities, quickness, flexibility, endurance, and power qualities. **Results:** The comparative analysis of the results of the level of development of physical qualities in age and gender aspects, with the corresponding norms, before and after the application of experimental exercises was carried out. Considering the results of the level of development of physical qualities of 15-16-year-old persons in the age aspect, it should be noted that there is a tendency to improve the results with age. In most cases, the results differ unreliably ($p>0.05$). The analysis of the results of the level of development of physical qualities in the gender aspect revealed that boys demonstrate higher results in control exercises than girls ($p<0.05-<0.001$). The exception is the indicators of the development of flexibility. A comparison of the initial data on the level of physical fitness of 15-16-year-old pupils with generally accepted norms showed that the results correspond to the assessment as "satisfactory". After the introduction of ultimate frisbee exercises into the educational process, there was an increase in the level of development of physical qualities of pupils of the studied groups ($p<0.05-0.01$). A comparison of the results obtained after the experiment with the norms showed an increase in the level of physical fitness of representatives of both age groups to the assessment "good". **Conclusions:** The conducted research testifies to the positive influence of ultimate frisbee exercises on the level of physical fitness of 15-16-year-old pupils, which makes it possible to use widely the proposed by us means in the process of school physical education.

Keywords: physical qualities, motor activity, high school pupils, physical culture

Technology of implementation of the control system of team sports games in the process of long-term improvement

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Introduction: Purpose of the research to develop and theoretically substantiate the technology for implementing the control system in team sports games in the process of many years of improvement. **Material and methods:** the scientific substantiation of the general technology for the implementation of the control system in team sports games was formed on the basis of generalization of scientific research on sports games, there was a combination of modern trends in the development of team sports and the latest trends in the system of theoretical knowledge about control in the system of training athletes in Olympic sports. In the course of the study, the following research methods were used: analysis of special scientific and methodological literature, analysis of documentary materials, pedagogical observation, systemic method, generalization and systematization of data. **Results of the work:** the article presents the scientific substantiation of the general technology for the implementation of the control system in team sports games in the process of long-term improvement. The goal, objectives, principles, approaches, characteristics of all stages and constituent parts of the technology are presented. **Conclusions:** the use of the general technology for the implementation of the control system in team sports games in the process of long-term improvement makes it possible to optimize the control system of the preparedness and competitive activity of athletes specializing in team sports games, taking into account the specifics of the team game and the tasks of the long-term training stage.

Keywords: control system, team sports games, technology, long-term training.

Relationship between cognitive ability and motor skills in preschool-age children

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Aim: The aim of the research was to verify the existence of a relationship between cognitive ability level and motor skills level in a selected group of preschool-age children. **Research Methods:** To determine the level of motor skills of children, we compiled a test profile based on a short version of the BOT-2 test. To determine the level of cognitive abilities of a child, we used the Color Trail Making Test for children. In total, 42 children were measured by these tests, including 20 girls and 22 boys, with an average age of 6.12±0.53 years. **Results:** The results of the measurements showed that there is a strong relationship between the level of cognitive ability and the level of motor skills in preschool-age children (r_s=0.77, $p<0.001$). In the motor-related sub-areas, a close relationship was shown to cognitive ability level in coordination (r_s=0.82, $p<0.001$), balance (r_s=0.58, $p<0.001$), speed and dexterity (r_s=0.76, $p<0.001$) and upper limb coordination (r_s=0.50, $p<0.01$). The interdependencies found are moderate to strong. A relationship between strength and cognitive ability has not been demonstrated. Even with the acceptance of all limits of the tests, the testing process and the specifics of preschool-aged children, a strong relationship between motor skills and cognitive abilities can be noted.

Keywords: Cognitive ability, preschool-aged children, motor skills

Feasibility study on the Bruininks-Oseretsky Test of MotorProficiency Second Edition for Pre-school Aged Children

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Introduction: A sufficient level of movement competence (MC) is a significant health, psychosocial and cognitive development factor. Pre-school age is a critical period for acquiring basic movement skills determining the level of MC. This study evaluates the feasibility of the assessment tool Bruininks-Oseretsky Test of Motor Proficiency 2nd Ed. (BOT-2) for preschool children. The objective of this study is to offer an informative resource for teachers educating 4–6 years old children, which would enable teachers to make an informed decision about the use of the BOT-2 based on a qualitative analysis of the feasibility. **Methods:** Eight general areas of focus for feasibility studies proposed by Bowen et al. (2010) adjusted for an analysis of motor assessment tools were used to evaluate feasibility. These areas included acceptability, demand, implementation, practicality, adaptation, interaction, expansion, and limited-efficacy testing. Each adjusted area of focus was scored as poor (1), average (2), or good (3). The feasibility was evaluated based on the experience of assessors from an assessment of preschool children by the BOT-2 complete form. The research sample consisted of 65 children (31 girls) of average age 6.09±0.24 years with typical motor development. The research sample scored 47.3±4.8 (standard score, M±SD) in total motor composite. **Results**: Compared with the adapted version of the feasibility assessment by Klingberg (2018), consisting of administration time, equipment, space, assessment type, items, training, and qualifications required, the BOT-2 scored the lowest in terms of feasibility. The BOT-2 reached a score of 12 out of 21 points, placing the BOT-2 among the motor assessment tools with the lowest score, similar to the Test of Gross Motor Development 2nd edition. Moreover, administration time, equipment, space, and items requirements were generally scored as the poorest. **Conclusion:** The results of this study suggest that the administration of the BOT-2 complete form for preschool children is relatively difficult based on the feasibility evaluation. In addition, the BOT-2 displays a low feasibility level and seems less practical compared to some of the other motor assessment tools.

Keywords: feasibility, pre-school age, Bruininks-Oseretsky Test of Motor Proficiency.

Mental well-being among Jan Dlugosz University students during the COVID-19 pandemic

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The COVID-19 pandemic forced a change in the form of education. A large part of the teaching activities had to be adapted to e-learning. During this time, students were more isolated and their social contacts were severely limited. Furthermore, the influence of the above factors on the quality of education, social and financial functioning, as well as eating habits in this period, could alter the mental well-being. Therefore, the objective of the study was to investigate the prevalence of depressive symptoms and the level of perceived stress during online learning among students from Jan Dlugosz University and to identify the variables that have the most significant impact on mental health among students. In total, 444 students of Jan Dlugosz University in Czestochowa (Poland) were examined. 76% of the respondents were women. Almost all of the participants were first, second, or third year students. The questionnaire was sent from employees to students in April 2021. It consisted of 3 parts: the perceived stress questionnaire (using the Perceived Stress Scale, PSS-10), exacerbation of depressive symptoms (using the Beck Depression Inventory, BDI), and an original questionnaire consisting of 11 questions in 4 areas - related to social (1) and financial (2) functioning, education (3) and eating habits and stimulants (4). The responses to the author's questionnaire were placed on the 5-point Likert scale. In conclusion, 58% of the respondents were characterized by a very high level of perceived stress and 29% by high levels of depressive symptoms. About 2/3 of the respondents stated that during the e-learning period, the quality of education and the motivation to learn decreased. More than half of the students (51%) would not benefit from psychological help, even if it were necessary. Furthermore, isolation affected women more, especially in terms of social life and economics. It seems necessary to implement appropriate support programs for students, which could have the potential to improve their psychological condition.

Keywords: anxiety, depression, mood, epidemic

School sports in the Second Republic of Poland on the example of sports competition of students of the Gymnasium Sułkowski in Rydzyna and the Krzemieniec Secondary School

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School sport played an important role in the education system in the Second Polish Republic. A very interesting annual form of sports competition was the competition between schools - Junior High School. Sułkowskich in Rydzyna (Poznań Province) and the Krzemieniec Secondary School (Volhynia Province). The initiative to conduct inter-school competitions came from the management of the Gymnasium. Sułkowski in Rydzyna. Competition regulations were developed, which indicated that the competition would be held alternately in both cities each year. Teams of 15 people could participate in the competition. An important point of the regulations was the provision that team members had to have the National Sports Badge, which was a proof of comprehensive physical development, and the results of the competition in individual competitions will be assessed as a team. Sports competition, carried out in the years 1933-1938, took place in the following disciplines: sports games, athletics, shooting and tennis. The first competition took place in Krzemieniec, on May 13-14, 1933, when the students from Wielkopolska won a convincing victory (85:10). It is worth noting that in the course of the following years the difference in the sports level between schools gradually blurred, so that in 1938 the students from Rydzyna achieved a minimal victory (74:71). Schoolchildren from Kremenets won the competition in athletic powerlifting, volleyball and shooting with military weapons, while Rydzyna's students won the competition of athletics two-track, five-track athletics, basketball, small arms shooting, 4 x 100 m relay and handball. Sports competition of schools, apart from sports, had cultural, patriotic and educational values.

Keywords: Gimnazjum im. Sułkowski in Rydzyna, Krzemieniec Secondary School, sports.

Self-assessment of the influence of physical activity on the effectiveness of professional work of a nurse

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Introduction: The aim of the research was to obtain knowledge on how physical activity influences the effectiveness of nurses' work. **Material and methods:** The study included 40 women aged 40-55 years. All respondents worked for over 20 years as nurses in the Provincial Specialist Hospital in Częstochowa. The measurement was performed using the standardized Minnesota Leisure Time Physical Activities (MLTPAQ) questionnaire. **Results:** More than half, as many as 57.5% of the respondents admitted to occasional physical activity or the complete lack of it, not counting daily household chores. Only 5% of respondents regularly take up sports and recreational exercises every day. 15 surveyed nurses admitted to regular physical exercise 2-5 times a week, including work in the garden, which constitutes 37.5% of all respondents. The preferred forms of physical activity in the surveyed population are walking (30%), cycling (almost 45%), exercising at home (27%), and swimming (20%). The biggest barriers to taking up physical activity are: lack of time and fatigue after finishing work (45%) and lack of motivation, interest and acquired habit (38%). On the other hand, the strongest incentive to engage in physical activity is care for general health and improvement in physical and mental condition (65%). Other motivating factors for regular exercise are maintaining a healthy body weight and a better figure (55%). **Conclusion:** The conducted research shows that in the opinion of most of the respondents, physical activity does not increase the level of effectiveness of their work. However, on the basis of the conducted research, it is possible to notice the existing relationships between the age of the respondents, health condition and the frequency of physical activity. In order to prove that sports and recreational exercises affect not only the overall fitness of the body, but also the efficiency and effectiveness of professional work of nurses, more in-depth analyzes should be carried out. Due to the extensive and multithreaded nature of the issue, this research is the basis for further research and the development of precise conclusions.

Keywords: physical activity, specificity of the profession of a nurse, related risks with the profession of a nurse, factors influencing the lack of willingness to exercise

Conception of effective mass and effect of force – measurement of taekwon-do master

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Background: Engagement of mass during a strike in martial arts and its relation to generated force is one of the factor, deciding on the success of an athlete. The aim of this study was to calculate the quantitative portion of effective mass of a athlete who execute striking techniques, by registering a force of strike and time of its contact with a sensor (target). **Material and methods:** Black belt taekwon-do (International Taekwon-do Federation) master (age 32 years, body mass of 60 kg, height of 160 cm) performed three types of techniques for three times; roundhouse kick, front kick, side kick and straight punch. His target was a shield mounted on force plate MC 12-2K with amplifier GEN5. Acceleration data was obtained by mounting wireless IMU sensor manufactured by Noraxon attached to a lateral side of a foot. **Results:** The highest force was registered for side kick (2406.9 ± 299.8 N), and the lowest for front kick (2008.6 ± 284.8 N). The shortest time of contact with a target had roundhouse kick (0.026 ± 0.010 s), while the longest front kick (0.119 ± 0.052 s). The highest effective mass was achieved by front kick (44%). The highest effect of force coefficient was obtained by roundhouse kick. Other techniques with much lower values seems to be push-like movements. **Conclusions:** During strike, a crucial factor for its effectiveness lies in its destructive power. It does not only depend on generated force and engaged mass, but also on contact duration. Proposed quantitative indicators could be beneficial during preparation of an athlete to sport competition. Correctly calculated effective mass allows to measure force in a training environment.

Keywords: martial arts, biomechanics, force plate, acceleration, effective mass

Application of the hawk-eye statistics in the analysis of the performance of the elite tennis players

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Quantitative markers of the tennis performance, known as statistics are a common tool used by tennis coaches and players. However, compared to other sports, the amount of available information was always insufficient. The analysis of the tennis game moved to the next level with the development of Hawk-eye system. This system is based on 10 cameras (8 for live Hawk-eye) enabling the tracking of the moving objects (ball and players), which offers various options of statistics, including the coverage of the court, the direction of the shots, movement heat-maps and many more. Each player has its favorite shot, serve corner or a typical way of covering the court in a particular situation. However, with the better ranking, the players become less predictable. The aim of this work is to find the unique patterns in the game of the particular player and present tactical options of using them in the benefit of the possible opponent. For this purpose, tennis matches of the best upcoming players were analyzed using Hawkeye data from the ATP tournaments (Masters series and 500's). Moreover, the comparison with the elite players of the last decade was made, to find out the difference between the experienced players and the youngsters. The main subject of the examination was the movement of the competitors, since it is the crucial part of the tennis performance

Keywords: Hawk-eye, statistics, tennis, movement

Convictions concerning self-coping with neuropathic pain - selected aspects

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Introduction: The studies have shown that the cognitive strategies used to cope with chronic pain play a very important role in the adjustment to emotional distress. The intricate relation between the cognitive factors and coping with pain should not be reduced to a very simple notion as the feeling of pain is associated with a complex of social, economic effects and emotional results. One of the aspects of coping with strong stress is the subjective evaluation of the possibilities of coping with the possible pain (current and anticipated), stressful situations and illness. The conducted study was to determine if there is a relation between type of psychological cognitive conviction concerning the possibility of self - coping with pain the appearance of neuropathic pain. **Method:** The research covered 49 hospitalised participants of territorial defence (33.23±8.54 years old) with the use of standardised questionnaires within psychology of health and documents' analysis. Participants differed in physical activity abilities. **Results:** Various types have been identified types of convictions concerning coping with pain in accordance with the criteria: 1 - neuropathic pain exists (n=18); 2 - no full confirmation of pain of a neuropathic nature (n=19); 3 - lack of neuropathic pain (n=11). Correlation between the presence of neuropathic pain and psychological factors turned out to be statistically significant ($p<0.05$). **Conclusions**: The obtained results indicate that neuropathic pain differentiated beliefs referring to the possibility coping with pain on one's own. Pain is a very complex condition and each person is affected differently. It has many physical and psychological components. No significant correlations have been noticed between the level of externalised and extinguished anger and certain types of beliefs concerning coping with pain.

Keywords: neuropathic pain, physical activity, stressful situations, cognitive strategies.

Occupational therapy in musculoskeletal pain - selected aspects

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Background: Chronic musculoskeletal pain restricts the performance of activities and is a major public health problem, which is associated with important consequences to patients and families. The focus of occupational therapists working in pain management is therefore to enable individuals with chronic pain to participate in the activities that have value and meaning to them, despite their pain. There are many aggravating factors associated with everyday life - selected chronic back pain aggravators: individual factors personality, emotional factors, adequate self-assessment, stamina, emotions, psychosocial factors, resistant to stress and tension, persistence physical and mental. Activity factors: standing postures stooping, hyperextending back, extended forward reaches, crouching postures; twisting and load pushing, pulling, inadequate lifting with pushing, over size loads, sustained heavy, handling postures, uneven carrying; vibration repetition and duration, feeling, hand tool use, weight, reaching, manual handling heavy lifting, twisting while lifting, over size loads. **Aim and Method:** The aim of the present work is to present the problems connected with occupational therapy that make the major part of the programmes for the treatment for mobility limitations connected with different dysfunctions. In many cases, the obstacle in performing the comprehensive programme for the treatment for mobility is pain of a musculoskeletal character. The method of problem narrative review and analysis of data relating to according to Web of Science and Scopus database. **Results:** The narrative review showed that occupational therapy for people with chronic pain can be as consisting activities of daily living, goal setting, grading activity, ergonomics, energy conservation, fatigue management, exercise, vocational rehabilitation, body mechanics and postural education, passive joint mobilization. In the broadly understood pain therapy, sleep hygiene is of great importance, and stress management, complementary therapies, relaxation, cognitive–behavioral therapy (CBT). **Conclusions:** Occupational therapy problem is still connected with many questions and requires further research. In this paper some aspects of the problem are presented. Many occupational therapists, psychologists, physiotherapists, find the employment in this tough area of musculoskeletal pain is a very difficult challenging. Chronic pain has some features making occupational therapy difficult to conduct. Occupational therapy would seem to be an intricate category, which satisfies the needs relating to various psycho-physical and psycho-social spheres in the functioning of an individual.

Keywords: musculoskeletal chronic pain, occupational therapy, back pain aggravators, emotional factors.

Taekwon-do as lifestyle behaviours and way to improve health

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Introduction: Historical and current research suggests that taekwon-do is not only as a form of self-defence, sports disciplines, and a leisure activity but also a form healthy lifestyle. In order to obtain proper effects, appropriate duration of trainings, intensity and frequency are necessary. The aim of this paper is to present the research answering if and how taekwondo have an influence on the elements on the level of healthy behaviours. **Method:** The research covered the group of 31 taekwon-do ITF (International Taekwon-do Federation) athletes (age:19.64±2.95 years). Standardized Inventory of Health Behaviours and our designed method are applied. The presented research measures particular health behaviour based on the frequency of revealed behaviour types. The research was conducted by those who are familiar with the community of people practicing taekwon-do. **Results**: The correlation between taekwon-do frequency practice time and ability to do prolonged exercise was observed ($p<0.05$). All adepts noticed an increased ability to long lasting varied efforts (90%). Interquartile range in proper eating habits was 9.00 scores. Interquartile range in health habits was 7.00 scores. **Conclusion:** The obtained results indicate that practicing taekwondo have an very big influence on everyday health-promoting behaviour, time spent in activity and time front of a TV, methods of spending free time, and the most important community in which free time is spent. The obtained data allow to make hypotheses that require further verification. More extensive research is required into the physical and physiological characteristics of taekwondo fighters to extend existing knowledge about martial arts.

Keywords: health, taekwon-do, lifestyle, training.

Evaluation of eating habits of Polish e-sports players using the QDS questionnaire

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Eating habits are important factor influencing health and physical fitness for both traditional sport and e-sport. The aim of this study was to evaluate eating behaviors of a group of Polish esports players. The nutritional diagnostic survey included 188 e-sports players aged between 18-29 years old. The research tool was a standardized questionnaire for a quick dietary assessment (QDS; Quick Diet Survey) validated in a group of 100 students. Statistical analysis of the validation using IBM SPSS (v26) software showed a high degree of reproducibility. The Chi^2 McNemar test values showed no statistically significant differences between the test and retest results for any of the 37 statements ($p>0.05$). Evaluating the eating habits of esports players showed that 14.5% had an adequate diet, 40.4% had a diet that was not fully adequate, and 44.7% of e-gamers had inadequate dietary habits. The most common inadequacies were: the use of dietary supplements without consulting a doctor or dietician (75.9%) and inproper frequency of consumption of meat substitutes (66.5%), legumes (64.4%) and fishes (62.8%). On the other hand, the correct eating habits of the e-gamers was related to: taking in adequate amounts of fluids daily (75%) and also during the physical efforts (72.3%), eating cereal products daily in each main meal (67.6%) and consumption the adequate number of meals a day (62.2%). The low proportion of e-sports players with a healthy diet and the high rate of nutritional abnormalities in gamers suggest that nutrition education is needed.

Keywords: eating habits, e-sports, Quick Diet Survey

Sense of self-efficacy in context of additional activities to develop taekwon-do skills

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Background: The aim of this paper is to expand the knowledge on the subject matter of the relations between behavior that is geared towards health and the feeling of effectiveness in the context of martial arts tourism in the form of Taekwon-do training summer and winter camps. The idea of self-efficacy is receiving increasing recognition as a factor (predictor) of health behavior change and maintenance. For many health-related areas studied self-efficacy appears to be a consistent predictor of a long-term success. **Method:** The research encompassed 59 people who train Taekwon-do (aged: 28.36 ± 7.96 years). The measurement of the feeling of effectiveness and healthy behavior was conducted by means of standardized tools. **Results:** The analyzed fighters who participated in the research in the majority of the sports meetings declared a higher level of the feeling of effectiveness ($p < 0.001$). Through cluster analysis emerged two groups, with a significant difference between self-efficacy (mean value of 20.05 points in contrast to 33.93 points in the second group). The group with higher psychological indices values attended a higher amount of summer camps during their practice history (at least two camps attended in the second cluster). **Conclusion:** To summarize, we found a consistently-positive relationship between sense of self-efficacy and health behavior change. Sports tourism connected with martial arts, as exemplified by training groups - professionally organized training camps of Taekwon-do is connected with the increased feeling of personal effectiveness, while also serving the enhancement of well-being, psycho-physical health, and the development of social skills.

Keywords: sense of self-efficacy; health, taekwon-do, activities

A interactive youth-centred methodology to explore perceptions of selected aspects out-of-school health activity

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The aim of this study is to present selected techniques that allows you to examine current views on youth self-perceptions of extra-curricular health activity. Exploring youth and children's understanding of health and illness still is a special challenge for researchers. The drawings and story (write, show, draw, tell) of young adults, youth and children have attracted and interested many psychologists and others professionals in the field of health education. Diary, writing and drawing is popular in youth and child health research perceptions of health and illness. Individuals, now have begun composing a blog, which is a cutting edge method for keeping a diary. The advantages of keeping a health diary are various. Youth and puberty are the developmental years, whose recollections merit recording. Travel and others activity websites are in vogue. Health activity, diet, regular physical activity is associated with wide-ranging health benefits for children and averts many diseases. Research to increase physical activity in children has, to date, largely underrepresented youth and children's voices. This assumption needs further study. The participative method, such as writing and drawing is the important point of efficient research methods in health psychology. Art as a form of communication and self-expression takes on a whole new level of importance when we consider the way that children use drawing. The drawings, provide a much-needed entry point into thoughts, emotions, and perspective on health situations, health behaviors and events. Additionally, important factor is provides children opportunity to practice speaking aloud and establishes an environment in which sharing and listening is valued (key point to a child-centred methodology to explore perceptions). Keeping up a journal (blog) is among a standout amongst the most widely leisure activities of individuals. Selected findings that describes the analysis of the expressive language of drawings and written comments (among others also blogs: write, draw, show, and tell)suggest that the draw-and-write technique has the potential to provide valuable insights into children's health perceptions. It is through their drawings youth and children express the views for many situations, and interpretations of their physical connections related to the body and social experiences. The draw-and-write technique is interactive and child-oriented methodology that facilitates the exploration of a wide range of topics and increases the reliability of data. Youth and children's health perception through creative drawing (among others also drawing situational jokes), painting, and music demand future research.

Keywords: health, activity, perception, writing, drawing, blogs,

Relationship between the training experience and the occurrence of back pain and injuries in team sport athletes

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Back pain is one of the most common health problems not only among the general population, but also among athletes. There is a prevailing opinion that adequate workload in sports has a positive effect on the back in terms of better posture, elimination of pain and injuries. However, there is a lack of evidence-based findings on the dose-response effect of athletic training on back pain and injuries. The aim of the study was to find out whether the training experience affects the intensity of back pain and the number of injuries in moderate-to-high performance level team sports athletes. A total of 147 male football players (age 27.8 ± 5.9 y; height 180.5 ± 6.6 cm; weight 77.8 ± 7.8 kg; training experience 17.2 ± 5.6 y) and 179 male ice hockey players (age 29.2 ± 5.9 y; height 181.6 ± 6.5 cm; weight 84.9 ± 9.0 kg; training experience 20.5 ± 6.1 y) were asked to fill out questionnaires focused on back pain and injuries: Oswestry disability index (ODI) and McGill Pain Questionnaire (MPQ). In addition, we investigated the number of back injuries occurred during the sports career of athletes. A nonparametric Spearman correlation was performed to determine if a relationship existed between the training experience of athletes and the occurrence of back pain and back injuries. Spearman correlation analysis revealed significant positive associations between the length of training experience and the occurrence of thoracic pain ($r=0.228$; $p=0.005$), low back pain ($r=0.197$; $p=0.016$), thoracic injuries ($r=0.224$; $p=0.006$), and ODI ($r=0.220$; $p=0.007$) in soccer players. In hockey players, training duration was significantly correlated with the occurrence of low back pain ($r=0.336$; $p<0.001$) and injuries ($r=0.205$; $p=0.006$), ODI ($r=0.248$; $p<0.001$), afferent ($p=-0.259$; $p<0.001$), proportional ($r=-0.233$; $p=0.002$), mixed ($r=-0.166$; $p=0.027$) and total MPQ ($r=-0.163$; $p=0.029$). The results of this study suggest that length of training experience is another important factor influencing back injury pain. Therefore, it is necessary to focus increased attention on more experienced players and include considerably more compensatory exercises and regular time to recovery in their training process. This study was supported by the scientific Grant Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic and the Slovak Academy of Sciences under the Grant No. 1/0163/21 „Prevalence of pain and disability of the spine and joints in selected types of sport".

Keywords: McGill Pain Questionnaire; Oswestry disability index; football; ice hockey

Analysis of selected determinants of the health of university students after the adoption of sars-cov-2 measures: an observational study

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University students are exposed to a higher risk of health problems than the majority population. The new coronavirus disease impacts global behavior, social isolation, and reduced quality of life. This paper aims to analyze university students' sleep regimes and health after adopting SARS-CoV-2 measures. The quantitative research method involved four standardized questionnaires: IPAQ - Short form, BSW/A - Bern Questionnaire on Subjective Well-being of Adults, Stress Test, and Pittsburgh Sleep Quality Index. The online administered questionnaire was applied via a Google form. 2172 university students from three Eastern European countries participated in the survey, aged 1521 women and 651 men, at an average age of 20 years. The research took place from November 2021 to the end of February 2022. The results show a plausible perception of health in 35%, compared to 65% of the respondents before quarantine measures. If we compare students' health before and during the quarantine, 68% report an identical condition, 18% report an improvement, and 14% indicate a deterioration in their health. 14% of university students reported a deterioration in sleep quality compared to before the quarantine. When verifying the given findings, it will be necessary to carry out further cross-sectional and longitudinal research to understand better the complex relationship between SARS-COV-2 sleep mode and the health of university students.

Keywords: Health, COVID-19, College students, Sleep regiment,

Compliance to secondary prevention of smoking as a risk factor of recurrent myocardial infarction

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Introduction: Compliance to treatment is an important condition of quality and effectiveness of patient therapy. **Aim:** To study the awareness and compliance to prevention of tobacco use of patients after myocardial infarction (MI) in the residual period. **Materials and Methods:** To study awareness of risk factors and compliance to secondary prevention of MI, a representative sample was created by randomization, taking into account the proportional distribution in the population by age (under 65 and over 65 years old) and sex. Patients' awareness of risk factors, use of preventive measures and compliance to treatment were assessed on the basis of a questionnaire. 333 respondents took part in the questionnaire – 234 men (70,27%) and 99 women (29,73%), the average age – 62,5±9,8 years old. The period after MI averaged 2,5±1,6 years (from 0,5 to 7,0 years). **Results:** 299 patients out of 333 (90,99%) answered «Yes» to the question «Do you use any methods to prevent cardiovascular disease, i.e. are you doing anything to reduce its risk of developing or worsening?». In order to determine patients' awareness of reducing the risk of recurrent heart attack, 15,92% were aware that smoking cessation reduces the risk of recurrent MI. Amongthose informed people were 20,09% of men and 6,06% of women ($\chi 2=9,21$; $p=0,002$). 11,04% of patients said that they quit smoking to prevent a heart disease. It should be noted that 70,27% of respondents received recommendations from their doctors to smoke less or quit smoking. **Conclusions:** Low level of awareness of the possibility of risk factors modifying for recurrent heart attack is associatedwith a low compliance to non-drug secondary prevention measures after MI such as smoking cessation (F $p=0,000$) and alcohol reduction ($\chi 2=35,29$; $p= 0,000$).

Keywords: cardiac rehabilitation, preventive medicine, smoking

Polish horse riding at the Olympic Games after the Second World War

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Horseback riding events were for the first time included to the Olympic Games programme in Stokholm in 1912. Polish horsemen made their debut in Olympic Games in Paris in 1924. In the interwar period, they took part three times in Olympic competition: in Paris in 1924, in Amsterdam in 1928 and in Berlin in 1936. They were quite successful there gaining altogether 4 Olympic medals (2 gold and 2 bronze onces). After the Second World War, the restoration of Polish horse was conducted in difficult conditions. Hostile attitude of Polish authorities, lack of experienced national trainers, young age of contestants and lack ofa good class horses contributed to the fact that Polish horsemen took part in the Olympic not until in Roma in 1960. In the post war period the Poles took part in Olympic twelve times, competing in all horse riding events: Three Day Event (1960, 1972, 1980, 1988, 1992, 1996, 2004, 2008, 2012, 2016, 2020), jumping (1968, 1972, 1980, 2004) and dressage (1980, 2008 and 2012). Generally in that period Polish Equestrian Federation qualified 46 horsemen, including 6 horsewomen and 5 reserve competitors. The biggest achievement was Jan Kowalczyk's gold medal won in Moscow in 1980 on the horse Artemor and the silver medal won in a team ranking jumping at the same Olympic. Unfortunately, so far Polish horsemen have not been able to be as successful as cavaliers in the interwar period.

Keywords: dressage, Three Day Event, jumping, parcours, Olympic Games

Economic context of quality of life

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The essence and evolution of the concept of "quality of life" in economics. Components of the population’s quality of life: physical, economic security, material living conditions, employment, income, health, education, leisure, social contacts, ecology, management, protection of rights, and others. The Easterlin Paradox and the Quality of Life Analysis from Gallup. Measuring the quality of life of the population according to the methodology of the Economist Intelligence Unit, the European Statistical System Committee, the European Foundation for the Improvement of Living and Working Conditions, the Organization for Economic Cooperation and Development (Better Life Index), etc. Peculiarities of approaches to measuring the quality of life in different countries. PESTLE-analysis of factors affecting the level and quality of life. Income differentiation as a factor of the quality of life. The role of digital technologies in improving the quality of life. Comparative analysis of the quality of life in Ukraine and Poland in the pre-war period using international indexes such as: Human Development Index, Happiness Index, Global Competitiveness Index, Better Life Index, Index of Economic Freedom, Social Progress Index, etc. The population’s quality of life in conditions of war. The impact of the war with russia on the welfare indicators of the population in Ukraine and Poland. Ways to increase the level and quality of life: ensuring security, reducing poverty, developing the economy, expanding access to the labor market, educational and medical services. The relationship between the quality of governance and the quality of life. The role of civil society, social capital and collective leadership in improving the quality of life. New opportunities and risks of ensuring a high quality of life in today's turbulent world.

Keywords: measuring the quality of life, factors of the quality of life, economic welfare, war in Ukraine.

Assessment of myoglobin and oxidative stress markers changes under the influence of high physical load

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Introduction. The tactical exercises with high physical load trained professional skills and improved military performance. The high intensity training in combination with inadequate recovery volume in military environment leaded to changes of biochemical markers of muscle tissues damage and oxidative stress expression. Military personnel are in high risk group for health disorders, musculoskeletal pathology and psychological overload. **Aim.** The purpose of the study is to reveal changes of oxidative stress markers, total antioxidant capacity status after ten days of the intensive training. **Material and methods.** Participants of study were cohort of military personnel aged from 23 till 30 years and both gender (male (N=50), female (N=6). The participants of study group were tested three times: before physical load directly after physical load and four weeks of rest. We determined the myoglobin concentration level, the antioxidative system activity (catalase activity (CAT), superoxide dismutase activity (SOD), and total antioxidants capacity (TAC) in blood plasma. **Results and Discussion.** The results revealed the increased level of myoglobin before and after the intensive training, which normalized during the recovery period. Oxidative stress index is classified as low after ten days of intensive training. Two parameters of the enzymatic proteins (CAT, SOD) and one parameter of the non-enzymatic proteins of the antioxidative system (TAC) did not change during the intensive training. But we fixed increasing activity of CAT and TAC after recovery period. **Conclusions.** During the intensive training we determined increasing myoglobin level, fixed low-intensity oxidative stress level, but there were no changes CAT, SOD, and TAC. Increasing of CAT and SOD after recovery period indicated the positive effect of oxidative stress on antioxidative system. Optimizing the adaptation military personnel to physical load minimized the training-related injuries and enhancing the physical performance.

Keyword: oxidative stress, physical load effect, antioxidative system

Formation of a healthy way of life of students in the process of wrestling lessons

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Conversations with coaches and student wrestlers made it possible to determine that regular exercise wrestling contributes to: the motivation of a healthy lifestyle; health promotion and hardening of the body, contributing to their physical development and increased efficiency; the formation of vital skills and abilities in natural types of movements; versatile physical fitness, psychological qualities, compliance and education of hygiene skills (diet, daily routine, personal hygiene). Pedagogical observation of the educational and training process of students in wrestling schools in Kharkiv showed that the classes the athletes are not only improve the technique and tactics of the wrestling, and perform physical exercises from other sports (gymnastics, athletic games, track and field athletics) and movement games. Gymnastics is a special kind of physical perfection which includes a variety of exercises: structural and sequential (teaching rational ways of building, regrouping and moving for the purpose of developing collective action skills); floor exercises (involve the development of both individual body parts and the whole organism); free exercises (improving coordination of movements, developing a sense of rhythm, beauty of movement); gymnastic exercises on various special apparatus (acrobatics, developing strength, agility, mental agility, flexibility, gymnastic games, etc.). Sports: soccer, handball, basketball (they satisfy the natural urge for motor activity, excite collective experiences, give the joy of joint effort, strengthen camaraderie and friendship). Athletics: running, a variety of jumps, throws, and others (are a means of comprehensive personal development). Weightlifting helps to overcome difficulties and foster moral and volitional qualities (work with weights, dumbbells, a barbell and others). Moving games: knock-out, tug-of-war, rider, fighting roosters and others. It has been established that motor activity is an integral part of the harmonious development of the student. One of the areas, which affects the state of health, is an active-sports lifestyle, which is of particular importance for students. This can be achieved in the process of practicing wrestling. In the process of wrestling there is the formation of vital skills and abilities in natural types of movements and harmonious development of physical qualities that are necessary in everyday life. Therefore, practicing wrestling is not an end in itself, but it becomes a catalyst of life activity, a condition and an integral part of a full-fledged life of students.

Keywords: healthy lifestyles, wrestling, students.

Kayaking as a form of physical activity people with Parkinson's disease

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Research has shown that physical activity (PA) may play a role in slowing down the severity of symptoms in people with Parkinson's disease (PD). However, we have not yet developed the optimal set of PA forms that could bring the highest health benefits. The study aimed to determine the impact of kayaking classes on the level of physical fitness (PF) of people with PD. The study took part of 38 people with diagnosed idiopathic PD (age 63.48 ± 6,58 years, duration of the disease 6,58 ± 4,27 years) in stage III - according to Hoehn & Yahr scale. Subjects were divided randomly into two groups. The first (n=21) participated in kayaking activities 3 times a week for 60 minutes for four months, the other (n=17) didn't take part in any additional PA. To determine the level of PF, the Senior Fitness Test was implemented. Measurements were taken prior to the examinations and after the experiment. All subjects were informed about the purpose and course of study and gave their written consent to participate in them. Before analyzing the results of tests evaluating, both groups were compared with respect to age, duration of disease, and clinical condition. The conducted analyses did not reveal any statistically significant differences between the studied groups at the assumed significance level. Through the use of statistical methods, the comparisons could be made and the results obtained in the tests completed by both groups showed that statistically significant differences between the groups occurred in all the tests. The group of people participating in kayaking was characterized by a higher level of fitness. The largest absolute difference was observed in The Arm Curl Test (198%) and The 2-minute Walk (179%) while the smallest difference in The Back Scratch Test (115%) was observed. The conclusion was reached that kayaking as a form of physical activity changes physical fitness in people with PD and can be a method of improving motor skills.

Keywords: physical activity, physical fitness, Parkinson's disease, Senior Fitness Test

The sequence of joint powers in the standing and kicking leg when performing a taekwon-do side kick

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Background: Side kick is used often in power breaking in ITF Taekwon-Do, yet there is limited research into this technique. The aim of this study was to investigate the sequencing of joint powers for both legs in a step through side kick. Method: Three expert participants 4th – 6th degree, in ITF Taekwon-Do with 15 – 40 years of experience were asked to break as many inches of pine wood as they could do confidently for three side kick trials. The kick motion was divided into initial (1), lifting the leg (2) and final (3) phases. Results: The power values generally followed a trend of peaking in generation the following order; standing knee, standing hip, kicking knee, kicking hip. For the standing leg, the knee flexors and the hip adductors were the main generators whilst the hip extensors were the main absorber. For the kicking leg, the hip extensors were the main absorber whilst the knee flexors were the main generator in phase 2. In phase 3 the hip extensors were the main generators, with both the hip and knee extensors peaking in power absorption just before impact. Conclusion: The results suggested a distal to proximal sequencing of joint powers with the knee contributing the most in the standing leg. Taekwon-Do instructors can use this information to help inform training practices, and by incorporating targeted training drills to improve the power of those specific joints.

Keywords: ITF Taekwon-Do, Power breaking, distal to proximal

Perceptions of Portuguese female soccer players on injury prevention strategies

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The knowledge and beliefs of the players about the strategies for preventing soccer injuries, which might be an important approach as a primary prevention measure, can influence the implementation of preventive strategies aimed at reducing the incidence of injuries in elite athletes. The aim of the study was to investigate the perceptions of elite female soccer players about injury prevention strategies. A questionnaire on sports injury prevention strategies was completed by 102 female soccer players, competing at the national level competing at national level and with an average of 7 years of practice. The main reported strategies believed to prevent injuries were performing specific preparation exercises before training and games (86,3%), complementary soccer physical conditioning training (77,5%) and pre-season physical conditioning (69,6%). The less reported strategies were being informed by physiotherapists about injury risks (45,1%), nutritional counseling (38,2%), having more health professionals working with the team (34,4%), using protective equipment (21,6%), materials of better quality (16,7%) and material innovation (8,8%).
A sample of Portuguese elite female soccer players perceived the need to perform specific preparation exercises before training and games, as well as physical conditioning that complements soccer training, both in pre-season and in-season, as main injury prevention measures. In agreement, there is evidence in the literature that these strategies have a favorable impact on injury prevention. Further studies should investigate the relationship between the incidence, mechanism and location of injury with preventive strategies in Portuguese female soccer players.

Keywords: soccer, injury prevention, risk factors, epidemiology