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MEETING ABSTRACTS

Abstracts from the 1st Annual Scientific Conference of Physical Activity and Sports Tech for Healthy Lifestyles "Strengthening Sports & Health Monitoring Systems: Future Perspectives, Challenges, Concepts and Necessities": Podgorica, Montenegro. 8-11 December 2022

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Invited speakers

S1
PHYSICAL ACTIVITY AND PHYSICAL FITNESS IN THE PREVENTION AND TREATMENT OF DEPRESSIVE SYMPTOMS

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Present the relationship between physical activity, fitness and depression in older adults using open-access data from the SHARE project. SHARE is a database with a large sample size that researchers can use in the health and social sciences areas. We used it to study the levels of mental health and its physical activity and fitness determinants in the European and Israeli populations. Results have shown that physical activity provides a protective effect against depression and has a positive effect on depression treatment, in nonclinical and clinical populations. The protective effects of physical activity on depression are identified regardless of sex and age. Besides physical activity and its relationship with depression, in the aging process, there is a decline in physical function and muscular strength in both men and women. Lower muscular strength is also related to mental health issues such as depression symptoms. The decline in muscular strength might be related to depression symptoms, mainly because it plays an important role in the capacity to perform daily life activities, is associated with the functional performance and the feeling of achievement. Both physical activity and fitness have a protective effect against depression in older adults.

S2
THE IMPORTANCE AND WAYS OF MONITORING AND EVALUATING THE MOTOR ABILITIES OF PRESCHOOL CHILDREN

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The proper growth and development of children should be the focus of parents, but also educators, teachers and coaches. Developmental monitoring and screening can give a broad overview of a child's abilities, accomplishments, and potential delays. Certain tests of motor abilities can be excellent detectors of children with developmental disabilities. Physical fitness, particularly cardiorespiratory fitness and muscular strength, is considered a powerful marker of health in children and adolescents. The goal of this study is to review available literature on research related to monitoring and evaluating the motor abilities of preschool children. Specific key words "motor abilities", "motor abilities tests", "children", "preschool age", "physical fitness" were used to search rel-

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evant electronic databases, such as PubMed, Web of Science and Scopus. The results have showed the existence of several different tests for monitoring and assessing the motor abilities of preschool children. In this context, the authors most often mention the concept of physical fitness, which in childhood and youth has proven to be a powerful health indicator for children and young people, and is therefore assumed to play an important role in preschool children as well. Based on the information obtained from this systematic review, the PPREFIT battery was recommended as the most relevant for preschool children.

S3
IMPACT OF ENVIRONMENT ON NUTRITIONAL STATUS OF 7 YEAR OLD CHILDREN IN MONTENEGRO

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Many factors influence childhood overweight and obesity. They include individual and family factors in the home environment where a child lives and grows, as well as the broader community and society. To evaluate impact of environment on nutritional status of 7 year old children in Montenegro The fifth WHO COSI data collection round was conducted in 2019 in Montenegro, using a standardized protocol that included all three questionnaires. For this study were selected 1638 seven year old measured children who had fulfilled Family record form by their parents. In the 2019 survey, data were obtained showing that almost a fifth of girls and boys are overweight (18.1%), and a little under a fifth are obese (16.1%). Girls are overweight in almost the same percentage as boys, while almost every fifth boy (16.1) and every tenth girl are obese (10.5%). According to parents, 57.3% of children bring a snack from home, 21.7% buy products around the school or in a store at school. 41.5% of children go by motorized vehicle, a combination of walking and motorized vehicle 25.1%, and 33.1% of children are walking to school. The parents assess the safety of the roads to and from school as highly unsafe. School children in Montenegro do not live in an environment that encourages healthy lifestyles, primarily physical activity and proper nutrition.

S4
DEVELOPING A NATIONAL STRATEGY ON CHILD WELFARE AND HEALTH POLICIES CASE STUDY OF ALBANIA

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For many years in Albania there is a lack of a concrete and real strategy on promoting active living among Albanian children, although it turns out that for 30 years' (from drop out of communist regime) different strategies are offered from many governments that come and go. These strategies, designed at first glance, are very accurate but they have significant implementation shortcomings for the sole reason that the template is taken from very advanced economic countries. We know that many countries create their strategies based on very accurate population database and government available infrastructure projects. For this reason, since 2015 a group of young researchers at Sports University of Tirana have undertaken scientific research projects to build accurate databases related to risk factors of health, physical activity and participation in various sports at Albanian children. During this period, various scientific papers have been published regarding the current level of physical activity and prevalence of overweight and obesity by age group, location, and gender. Accurate descriptive data have also been created on children's participation in various sports. The participation of active children during the physical education and sports lessons is already known by this actual studies. A map has been created of the types of foods and fruits that children were offered and feed in and out of school. The sole purpose of this 5 years research strategy is to provide this database to local and central government units in drafting long-term and short-term policies for the areas mentioned above.

S5
POINT-OF-CARE METHOD IN EVALUATING BLOOD LIPID PROFILE IN ADOLESCENTS; ASSOCIATIONS WITH PHYSICAL ACTIVITY LEVELS AND BODY COMPOSITION

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Adolescents have low physical activity globally, leading to increased body mass and adverse blood lipid status. The aim of this study was to investigate status and associations among physical activity levels (PAL), anthropometric/body composition, and lipid profile of adolescents. This study included 267 high-school students aged 15-20 years from Split, Croatia. They were assessed on PAL (PAQ-A questionnaire), anthropometric/body composition variables (body fat percentage, mass, and height), and lipid profile by point-of-care method (high-density lipoprotein (HDL), non-HDL, low-density lipoprotein (LDL), cholesterol, triglycerides). Means and standard deviations were calculated for all variables. Pearson's correlation coefficients determined correlations between anthropometric variables and lipid profile. Adolescents had insufficient PAL (PAQ-A=2.64±0.72 for boys and 2.47±0.72 for girls). Low but significant correlations were observed between triglycerides and fat-free, body, and muscle mass among boys (Pearson's r=0.26-0.29, $p<0.05$). Among girls, significant correlations were found between non-HDL, body fat percentage (r=0.21, $p<0.01$), and body mass (r=0.21, $p<0.01$). Results confirmed that studied adolescents have low PAL. Also, anthropometrics/body composition was correlated to certain parameters of lipid profile. The study implies the importance of screening the lipid profile additional to evaluating anthropometric/body composition in school children. The study highlights better applicability of the point-of-care method in school populations compared to standard laboratory testing.

S6
A STUDY OF THE USE OF SMART DEVICES FOR PHYSICAL FITNESS MANAGEMENT

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Numerous studies have shown that physical activity is essential for health and gaining and maintaining physical fitness requires a physical activity routine in addition to following a healthy diet and getting enough sleep. Many people's daily lives now include different kind of smart devices to monitor and manage their physical fitness. The aim of this study is to investigate the motivations behind why and how people use smart devices in their physical activities. As a research methodology, the relational search

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model was applied. An online survey with both open-ended and closed-ended questions was utilized to obtain the data. A total of 642 participants filled in the questionnaire, SPSS 23 was used to analyze the data. Findings show that wristbands and smart watches are among the most widely used devices for physical fitness management. The primary uses of these devices is for counting steps and tracking daily physical activity. Results also suggest that using smart devices has a positive effect on increasing physical activity levels. Smart devices have a new and encouraging influence on sport and physical fitness activities and a growing number of people have been using these devices to plan, manage, track and measure their physical fitness.

S7

IDENTIFYING STRATEGIES TO PREVENT WEIGHT CYCLING IN YOUTH COMBAT SPORTS: A REVIEW

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Available evidence reveals exceedingly high prevalence of weight cycling in young combat sports athletes and strategies to prevent these practices are merited. A thorough review of the literature looking at the various strategies to prevent weight cycling in both youth and adult combat sports was performed. To date, the most effective system developed to prevent weight cycling was implemented in U.S. high school and collegiate wrestling. This was accomplished by: (1) limiting weight loss to ≤1.5% body mass per week; (2) determining a minimal competitive weight for each wrestler based on a lower limit of 5% body fat (males); (3) moving weigh-ins to 1 h to 2 h pre-competition; (4) adding 3.2 kg to each weigh category limit; (5) prohibiting the use of unsafe weight making methods; (6) randomizing the order of weight class competition (instead of heavier athletes competing later); and (7) requiring athletes to pass a hydration test (urine specific gravity ≤1.020) at the weigh-in. Whatever strategies are implemented at tackling the current alarming RWL trends in combat sports, the safety and wellbeing of athletes should be the utmost priority.

S8

INACTIVE LIFESTYLE AND RISKY BEHAVIOR OF CHILDREN: BETWEEN SPORTS ACTIVITY AND RISKY ENJOYMENT

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Clarifying the interrelation of essential factors enables the selection of intervention methods to encourage and promote socio-cultural socialized active lifestyles of children and youth. Based on the theoretical background, the core of the theoretical model was the hypothesis about the connection between children's risky behavior and the lifestyle adopted during children's development until adolescence. This research aims to determine the relationship between children's environment, lifestyle, and risky behavior. The survey was realized on parents of preschool and school children from five cities in Vojvodina, Serbia (N= 1800, 995 boys and 805 girls) from 3-11 years. The strongest effect on reducing children's risky behavior comes from the combined effect of three factors: local community, poverty index, parental engagement index (risky behavior index = -0.045, explained 45% of the variance risky behavior criterion variable index). Risky children's behavior positively correlates with inactive lifestyles for children and youth. It seems that a good strategy of activation of promotion of an active lifestyle and reducing children's risk behavior comes from the combined effect of three factors: local community, poverty index, and parental engagement. The data used in this study were collected within the research project "Inactive lifestyle and risky behavior of children and youth" (register number: 142-451-2258/2021-01), which was financed by the Ministry of Education, Science and Technological Development of Serbia and Ministry of Sciences of Montenegro.

S9

THE CURL-UP TEST PORTABLE DEVICE: REPORT OF A PATENT

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As we know the timed sit-up tests with legs straight or bent often result in bouncing, jarring movements and reflect more power than strength/endurance. Due to its weaknesses, recently the cadence-based curl-up test is recommended for testing the strength and endurance of the abdominal muscles. As there are some main details, the examiner needs to be awaking during testing, and it may result in some mistakes. So, we decided to make a Abdominal Strength and Endurance Assessment Device (ASEAD) based on FITNESSGRAM® curl-up test. Different parts of the device is: 1) folding ability and a handle for easy transportation; 2) Equipped with a sensor system to perform a complete cycle of trunk flextion and extension; 3) Equipped with a a sensor to hand location adjustment, by moving linearly on the rail and adjusting to the length of the upper body and hand of each examinee; 4) Using the speaker and metronome automatically at starting the test to keep 3-second cadence of movement; 5) Using a vibrator under the examinee's waist to inform and confirming him/her of the complete cycle of a movement; 6) Equipped with a software programming using a graphic and touch screen; 7) The personalization ability of each examinee, and to quick determination of the physical fitness level based on age and gender. This device has following benefits: 1) Quick and easy setup; 2) Ease of use and better communication with the user (user-friendly); 3) Usability for all people, both experts and non-experts; 4) No need for the examiner to supervise the test process; 5) The ability to measure large numbers of people simultaneously and without supervision, of course using several devices; 6) Automatic stopping of the test when examinee is tired or when the measurement is performed incorrectly. The ASEAD can be used without supervision and increase awareness each user to set a goal to improve their physical fitness level via displaying a specific evaluation table according to each person's

profile. The ASEAD recorded as an official patent in the General Directorate of Industrial Property, Intellectual Property Center, General Directorate of Patents, Tehran, Iran (92/A 002502) with International Classification Code A63B23/02;A63B23/02, and Patent Code 1399/10/29-103487.

S10
DOES RUNNING PERFORMANCE AFFECTS ON GAME RESULT IN TSC SOCCER TEAM?

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GPS technology is now increasingly used in major soccer teams in Serbia, to provide sports scientists, coaches, and trainers with comprehensive and real-time analysis of on-field player performance during a competition or training. During the survey, we processed basic data, in terms of how the running performance effects on the game results of the matches in the TSC adult men's team, which plays in the Serbian Mozzart Super League. We analyzed the first 12 official matches of the 2022/23 season, there were 5 wins, 6 draws and a 1 lost game. Distance- and accelerometry-based measures were recorded in real-time during the matches, using a wearable 10-Hz GPS integrated with a 400-Hz Tri-Axial accelerometer and a 10-Hz Tri-Axial magnetometer (Playertek, Catapult Innovations, Australia). In terms of speed, the players performed better in the winning matches, but there was no significant difference. The soccer players were running on the games in moderate (1197±130.97m), high (263.5±42.44m), and sprint (160.33±39.38m) intensity zones. The average distance by games was 10666±653.38 m, on the winning 9960.83±743.46m, on the draw 10500±482.33m and on the lost game 10166.42±653.38m, statistically no significant difference. It had been proven in soccer that not only the running performance, but also many other factors have an impact on the final result. Further deeper games analyses are necessary to support the team performance with scientific statistics.

S11
VITAMIN D DEFICIENCY – DOES IT REALLY MATTER?

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In the last 20 years, or so, numerous studies have been published dealing with vitamin D. Historically, Vitamin D was defined as a very important factor for bone health, but recently perspective of vitamin D importance has evolved dramatically. Even though, that technically Vitamin D is not a vitamin (apparently human body can produce sufficient quantities for good health under certain conditions), and its function in bone health is well documented, recently its role in many health states or diseases has been proposed (diabetes, celiac disease, asthma, atopic dermatitis, tuberculosis, and, most recently, COVID-19). Vitamin D deficiency may produce serious health issues related to lower blood calcium (hypocalcemia), lower blood phosphate (hypophosphatemia), and softening of the bones during childhood or adulthood - rickets and osteomalacia, respectively. However, these complications have become less common over time because many foods and drinks have added vitamin D.In this talk, we will give historical perspective and evolutionary development of Vitamin D importance, its role in bone health and non-skeletal-associated health issues. Also, we will present markers of Vitamin D measurements and how health professionals are looking to find solutions for deficiency issues, consequently trying to prevent health issues, such as falls, bone fractures, reducing quality of life, especially elderly people, through diet, supplementation or sun exposure. Current concepts and trends of Vitamin D for athletes will be discussed.

Oral presentations

O1
THE USE OF RATE OF PERCEIVED EXERTION (RPE) ON MONITORING INTERNAL LOAD IN SOCCER

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It has been widely recognized that accurate monitoring of Training Load (TL) may improve an athlete's preparation for competition. There are a variety of methods available to coaches for monitoring training load in athletes. However, despite increases in coach education and an increasing focus on well-designed, evidence-based training programs, there still remains a relatively high occurrence of injury, illness, and undesired competition outcomes in athletes. The goal of this study is to apply in soccer, Rate of perceived exertion (RPE) proposed by Foster et al, to quantify internal training load. Albania woman's national soccer team was used on the study, RPE was required from athletes to subjectively rate the intensity of the entire training session using a rating of perceived exertion (RPE) according to the category ratio scale (CR 10-scale). The session-RPE was determined by multiply the training duration (minutes) by session RPE as described by Foster et al. Individual internal loads of 20 training sessions were collected on arbitrary units. These arbitrary units show us the variation of the internal load during the micro cycle. RPE is a good guideline on monitoring training loads and modify them to improve day-to-day training. Key words: internal load, quantifying load, RPE, training.

O2
EVALUATION OF HEALTH-RISKY FACTORS IN EARLY ADULTS IN ALBANIA

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During early adulthood, many lifelong behaviors that have an impact on health are set in place. Lack of exercise, malnutrition, smoking, alcohol are among the main factors for conditions such as heart disease, obesity, type 2 diabetes and other life-threatening diseases. The goal of this study is to identify and notice the prevalence of health-related parameters in a sample of highly active/sport young adults, presuming a priori the absence of such problems in this group, compared also to their classmate. A group of 127, 18-20 years old students from Sports University of Tirana underwent this study (68 females and 59 males). A series of anthropometric, cardiac and hematological indicators were estimated. The results of key health-related parameters such as body mass index, body fat mass and visceral fat show average values of 23.4, 28.5 and 3.9 % respectively. Surprisingly, only 77.6% of the subjects display values within the normal ranges of the respective age and gender. Interestingly females show normal values of vis-

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ceral fat percentage (3.6%), despite the unexpected high values of Body Fat Mass of 33.5%. Normal average values instead were found for cardio-respiratory data as Heart Rate (77.6 bpm), pO2 (97%), blood pressure (117/75mmHg) and glycaemia (102mmol/dl). Even though they are preliminary and partial results of a wider and multi-factorial study, they highlight the importance of evaluating health-related indicators and risky behaviors even in physically active or sport individuals.

O3

ACUTE EFFECT OF A DYNAMIC-BASED STRETCHING WARM-UP ON PRIMARY SCHOOL STUDENTS' EXPLOSIVE STRENGTH

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The impact of different types of warm-up protocol on children's performance is clearly an unresolved issue that has not yet been satisfactorily investigated. The aim of the present study was to compare the acute effect of a dynamic-based stretching warm-up on standing long jump performance in primary schoolchildren. From the total of 186 students (53.5% females) who were invited to participate in the present study. Finally, 143 (53.1% females) students satisfactorily met the exclusion criteria (aged 8-11 years old). A cluster-randomized crossover trial in the Physical Education setting was carried on. The clusters were pre-established classes in the school setting. The crossover design was chosen to eliminate any negligible carry over effect. The results of the Multilevel Lineal Model showed that after the dynamic-based stretching warm-up students had statistically significantly higher standing long jump scores than after the no stretching warm-up (no stretching, adjusted M = 126.81 cm; SE = 1.54; dynamic stretching, adjusted M = 137.99 cm; SE = 1.54; - 2LL = 2314.892, F = 131.155, $p < 0.001$, d = 0.50). The dynamic-bouncing stretch as a final part of a warm-up improves explosive strength performance in primary schoolchildren. And seems to be a good option before carrying out explosive strength activities of the lower body.

O4

EFFECTS OF ACUTE BREATHING EXERCISE ON MENTAL WELL-BEING LEVEL IN WOMEN

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The purpose of the study was to investigate the effect of breathing exercises for body and mind awareness on mental well-being of women aged 16-55. The research was carried out with the voluntary participation of 1004 healthy women who are members of 13 social facilities within the Selçuklu Municipality. The program was implemented for a total of 60 minutes with 45 minutes of breathing exercise and 15 minutes of meditation. The mental states of the participants were evaluated using the "Warwick-Edinburgh Mental Well-Being Scale". The scale was administered twice, before and immediately after the exercise for each participant. One-way analysis of variance (ANOVA) and t-test were used to compare the groups before and after exercise, and Tukey HSD test was used as post-hoc test for significant ANOVA results. Mental well-being levels of the participants after exercise were found to be significantly higher than before exercise. When the participants were compared according to their age, income, marital status and having children; According to the perceived income status, the average mental well-being of those with low income was found to be significantly lower than those with middle- and high-income levels, an increase in mental well-being levels was observed with increasing age, and married participants and women with children were compared to singles and non-children. Mental well-being levels were found to be high. The results revealed that breathing exercise applied with a relaxation technique and awareness dimensions had positive mental effects in women.

O5

NEWLY DEVELOPED TESTS AND SPECIFIC DYNAMIC AQUATIC BALANCE

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Balance specificity is defined by media in which movement/activity is performed. There is evident lack of studies that deal with aquatic balance. The aim of the study was validation of newly developed tests for assessing specific aquatic balance. Examinees were 28 students (13 female and 15 male). Four tests were performed on floating water-mat (220x81x12cm). Test's sensitivity, reliability, homogeneity and practical validity was assessed by reliability coefficients, analysis of variance and correlations of newly developed tests with basic balance test measured on BIODEX. The statistical analysis showed high reliability of new tests (α-0.84-0.92). Inter-item correlation was in a range IIr-0.66-0.83. Newly constructed tests are reliable for measuring specific aquatic balance. Analysing the variance, the data showed significant differences between the items of measurements, so it could be concluded that the homogeneity of all tests is weak, excluding the Circle test. All participants performed better in every next item. We can assume that the participants have learned the test movements. Jumps seem to be disturbing on balance restoration and negatively influenced sensitivity of Two leg and Scissors tests. Considering high correlations between basic balance test on BIODEX and newly developed tests, practical validity of new ones was proved. Although we expected differently, there was no significant correlation with static balance and all new tests actually measure dynamic aquatic balance.

O6

PREDICTORS OF REACTIVE AGILITY IN ELEMENTARY SCHOOL STUDENTS

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Agility has two different appearances: planned and non-planned agility. Literature review show that various factors influence them differently. There is a lack of studies considering reactive agility predictors in school children. The aim of this study to examine predictors of reactive agility in elementary school children. 78 students (M=36; F=42) completed power tests (CMJ, SJ, DJ, Sprint 10 and 20m) and reactive (T RAG) and non-reactive (CODS) agility tasks. For the latest, the Blaze Pod (BP) system was used. Three lighting pods were mounted on 50cm cones in triangle formation with 4,5 meters distance between cones. Results were gathered by BP app. Statistical analyses included calculation of descriptive sta-

tistical parameters and multiple regression analysis. Results show power to be most important predictor of agility in boys and girls. Reactive strength was most significant predictor for boys (DJ; β= 1,03, RSI; β= -0.73), while jumping and sprinting power abilities were the most important predictors for girls (SDM; β= -0,96, S10; β= -0,52). Since TRAG test is conducted in small area and demands fast and explosive movements observed results are not unexpected. Yet, it is unclear why CODS test, executed on the same polygon and with the same movement pattern, didn't influence TRAG performance.

O7
STANDARDIZATION OF TEACHING TOPICS AS A METHODOLOGICAL APPROACH IN SUPPORT OF THE QUALITY IN PHYSICAL EDUCATION TEACHING

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As in any subject, physical education included, the quality of teaching is a constant requirement, which is affected and, in some cases, challenged by the suitability of its specific conditions and preconditions. The paper aims to prove that the implementation of physical education in pre-university education institutions is not based on unified professional standards of teaching. Also, the paper aims to present the idea that the standardization of teaching topics helps students to know the indicators of the success, and thus, to improve their performance. The article relies on the qualitative method of analysis. There are analysed, publications and models created in relation to professional standards; curriculum documents on the subject of physical education; study programs of our universities that train physical education teachers. Interviews with primary and secondary school teachers were conducted and analysed. The implementation of teaching in physical education, differently from its planification in the school level, is not based on unified standards of teaching. Development and implementation of professional standards for the teacher will affect the quality of planning and professional realization of teaching, contributing to the full expression of the educational and formative potentials of the subject.

O8
LEISURE TIME EXPERIENCES OF WOMEN TEACHERS DURING THE PANDEMIC PROCESS

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Based on the leisure theory, this study aimed discuss and evaluate the leisure experiences of women teachers during the pandemic, through the narratives of women teachers. The research was carried out with 22 female teachers living in Isparta during the pandemic process, using the sampling method and data saturation methods. In this study, qualitative research method and phenomenological approach were used since the leisure experiences of female teachers living in Isparta during the pandemic were examined in detail. In the phenomenological design, data are collected by interview method. In this study, four themes were identified as "gender norms and leisure activities", "the most common leisure time activities of teacher women", "perceived barriers" and "main motivators". During the pandemic process, female teachers have moved into a new order at home. Responsibility at home, loneliness, repetitive days, the trouble of not being able to go out, the increase in the amount of food and housework, the overlapping of online lessons and responsibilities at home have caused the process to pass with difficulties in general. In this process, women engaged in leisure activities accompanied by the obstacles created by their responsibilities and the motivational effects stemming from the need or the feeling of pleasure. This may be due to the fact that their education level is high and they know how to use time correctly.

O9
DETERMINING THE EFFECTS OF 4 WEEKS OF LAND EXERCISES ON SWIMMING PERFORMANS IN CHILDREN WHO DO SWIMMING EXERCISES

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It has been stated that land exercises in addition to swimming exercises increase the level of fitness. The aim of this study was to examine the effects of land exercises on swimming performance in children who regularly practice swimming. 30 children (10.17±0.93 years, 37.08±7.47 kg and 141.5±7.36 cm) participated in the study. Swimming exercises plus land exercise and swimming only groups were created by random method. Unlike the other group, the land exercise group did upper and lower extremity exercises (push-ups, resistance band pulls) and core exercises with body weight and resistance bands for four weeks. For four weeks, the other group continued to do swimming exercises only. In the statistical analysis of the data, analysis of variance (ANOVA) was used for repeated measures. The factors were determined as 2x2 time (pre-training and post-training) and group (swimming plus land exercise group and swimming only group). $p<0.05$ was considered statistically significant. After the training, it was determined that the land exercises increased the 25-50-100 m freestyle degree, and the 25 m backstroke swimming degree. In addition to regular swimming exercises, land exercises with body weight and external resistance may increase swimming performance by increasing muscle strength.

O10
EFFECTS OF SMALL-SIDED GAMES ON AGILITY, ENDURANCE AND EXTERNAL LOAD IN SOCCER

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This study aimed to analyze the influence of small-sided games (SSGs) with different pitch size and number of players on agility, endurance, and external training load variables in young soccer players. Twenty soccer players (age: 16,70±0,57 years) participated in this study. The players were randomly assigned to three groups as group 1 (SSG1, 3-against-3, 15x20m), group 2 (SSG2, 3-against-3, 20x25m), and group 3 (SSG3, 4-against-4, 20x25m). The groups played SSGs in addition to their training program during six-week. Endurance, agility, and GPS outputs were obtained from data collected using the GPS devices and field tests before and at the end of training period. While a significant interaction (groupxtime) was not found for Yo-Yo test results, there was a significant main effect of time for Yo-Yo test results. Results of Yo-Yo test were significantly higher at the end of the six-week than the pre-test values ($p<0.05$). There was no a significant interaction (groupxtime) for

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Illinois agility test time. However, main effects of group and time factors were significant for Illinois agility test. It was revealed that agility performance of SSG2 was significantly better than that of SSG3 at the end of the six-week. Agility test time of the players was significantly lower at the end of the six-week than the pre-test ($p<0.05$). The main effect of group and time factors and group x time interaction were not found significant for all variables, except for mean and maximum heart rate values in GPS data ($p>0.05$). As a result, it was found that there was no effect of SSGs with different pitch size and number of players on performance.

O11
THE EFFECT OF DIFFERENT ROUTE CHOICE ON PERFORMANCE IN ELITE ORIENTEERING ATHLETES

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The purpose of the study was to determine the effects of different route choice on performance in elite orienteering athletes. Fourteen elite orienteering athletes (25,79±5,09 years, 177,71±4,39 cm, 73,00±4,99 kg) participated in the study. The athletes run twice with 3 days interval in the same race course as selected race course (the route determined by themselves) and optimum race course (the route determined by the expert). Isokinetic concentric strength of the knee at velocity of 60 and 180 °•s-1 and maximum oxygen uptake (VO2max) were measured one week before running. Heart rate and blood lactate were measured at the before, 5th, 15th, and 30th minutes after running. Maximum oxygen uptake was 53,70± 4,61 ml•kg-1•min-1. No significant difference was found between the right and left leg in both extensor and flexor muscle strength ($p>0,05$). It was found that the athletes finished in a shorter time and distance the optimum race course than selected race course ($p<0,05$). Mean and maximum HR of the athletes was similar to each other in all measurement time in both courses ($p>0,05$). LA was significantly higher at the end of race, and the 5th and 15th minutes after running than before race in both courses ($p<0,05$). LA level was significantly lower in optimum race course than the other course at the 5th and 15th minutes after running ($p<0,05$). Route choosing was a positive effect on the performance; however, that there was no an effect on physiological parameters.

O12
DIFFERENCES IN YOUTH WATER POLO PLAYERS AND SWIMMERS IN ANTHROPOMETRIC CHARACTERISTICS AND MOTOR SKILL TESTS

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Water polo is a polystructural complex sport with a lot of intensity changes and contact between players. Moreover, swimming is described as monostructural sport that demands high aerobic and anaerobic capacities from athletes. Furthermore, both sports are done in water media and demand specific anthropometric characteristics for high performance. The aim of this study was to determine differences between water polo players and swimmers in anthropometric characteristics and motor skills tests. The sample of participants included 14 water polo players and 15 swimmers, all males. Their chronological age at the time of testing was 17.43±0.69 years. The participants were competing in the junior category. The sample of variables included anthropometric characteristics measurements and motor skills tests. Body mass, body height, sitting body height, wing span, foot length, fist width, knee diameter, and body fat percentage were anthropometric measurements. Furthermore, motor skills tests included: 25, 50 and 100-meter sprints, countermovement jump, reactive strength index, and medicine ball throw. The data were statistically analyzed, and calculated parameters included descriptive statistics and T-tests between groups. Analysis of results showed that significant differences were found in some anthropometric parameters, which included: body mass, foot length, fist width, knee diameter, and body fat percentage. From motor skills, differences were found in a 25-meter sprint, reactive strength index and medicine ball throw. These findings imply differences in characteristics and skills used in water polo and swimming, which showed the importance of these parameters for athletes.

O13
LIBEROS' PERCEPTION OF THEIR PLAYER ROLE IN VOLLEYBALL

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The libero position is one of the most interesting in volleyball because, due to the different jersey color, they differ from other players on the court. The libero's character is expressed through several factors. Sports, including volleyball, have generally made a big shift in recent years. The study aimed to determine personal perception of 28 liberos regarding their player role in volleyball. The study included Croatian female volleyball players who compete at the highest level – Superleague, whose mean chronological age was 20.89±3.30 years. It is a representative sample because, since each team has two liberos in the registered lineup for the competition, all libero players were included. Using the newly-constructed anonymous questionnaire Liberos' perception of their player role in volleyball, senior volleyball players assessed their motivation, self-confidence, sense of responsibility, success and satisfaction with their status, their perception of the coach's influence and behavior, and the importance of psychological preparation for their player role. Liberos assessed their role as very responsible, extremely important, and with great personal contribution, and they scored high on motivation, self-confidence, and responsibility. They expect personal advancement and psychological support, which is not adequately provided by professional staff in the clubs. Further research is necessary between and within the player roles in volleyball, especially liberos.

O14
ASSOCIATIONS AMONG PERFORMANCE IN TWO OLYMPIC WRESTLING STYLES AND RESULTS IN SPORT-SPECIFIC TESTS

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Wrestling is an Olympic combat sport with two Olympic styles, Greco-Roman and Freestyle; thus, few wrestlers are successful in both styles. The question arises whether the same sport-specific tests can be used in both styles of wrestling. The research aims to verify the association between the results of both Olympic wrestling styles and sport-specific tests. The study was conducted on 19 elite Croatian wrestlers who competed at the U20 and U23 national championships in both Olympic styles, tested with three sport-specific tests: Specific Wrestling Fitness Test (SWFT) with speed and heavy dummy, and suples slam ball test. A positive correlation with the result in Greco-Roman wrestling was obtained in the SWFT

with speed dummy in the first series of throwing (Pearson's r=-0.48). A positive correlation between wrestling success was obtained in number of slams in suples ball test (r=-0.59). It is logical that a significant correlation for throwing the dummy was obtained in Greco-Roman wrestling because the suplex throwing technique is used more in Greco-Roman wrestling, while in freestyle wrestling, foot techniques dominate. We can conclude that sport-specific tests in wrestling should still be analyzed and developed separately by style; some tests can be used in general for both styles, but it would be good to identify and confirm them scientifically.

O15
DOES RUNNING PERFORMANCE DEFINE SITUATIONAL EFFICACY OF TOP-LEVEL SOCCER PLAYERS?

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Although running performance has previously been demonstrated as an important determinant of situational efficacy for soccer players, there is lack of studies to investigate this issue in top-level soccer competition. This study aimed to examine relationship between situational efficacy and running performance of soccer players from UEFA Champions League (UCL). The players' running performance (n=244) was collected during UCL group stage matches (n=20) in the 2020/21 season using semiautomatic optical system, and classified by match playing position as: central defenders (CD; n=79), fullbacks (FB; n=65), central midfielders (CM; n=55), wide midfielders (WM; n=28) and forward (FW; n=17). Running performance variables included the total distance covered and distance covered in five speed categories (low-intensity running, running, high-speed running, and sprinting). Situational efficacy was assessed by position-specific performance statistics index (InStat index). Pearson's correlation was used to examine position-specific relationship between InStat index and running performance. InStat index was correlated with (i) total distance covered ($r=0.31$, $p<0.01$), running ($r=0.36$, $p<0.01$) and high-speed running ($r=0.36$, $p<0.01$) for CDs, and (ii) sprinting for WMs ($r=0.45$, $p=0.17$). No correlations between InStat index and running performance were found for FBs, CMs, and FWs. These findings show that situational efficacy of top-level CDs and WMs is affected by running performance. Training process for these players should be tailored accordingly.

O16
INFLUENCE OF ARM SWINGS FIELD TEST PROTOCOLS ON VOLLYBALL JUMP PERFORMANCE

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Agreed that jump movements increase the player's vertical jump height by about 10% compared with the jump without an arm swing. While the mechanisms by which they improve player jump performances have yet to be fully described. Methods; to test the effect of arm swing on height jumps. We test all participants by Sargent Jump, spike and bloc arms and their results were controlled by box jump. All participants in this study are elite male volleyball players, members of the champion team in the premier league of the Algerians (N=58, mean ± SD: age = 24.8 ± 2.9 years, body height = 1.72 ± 0.75 m, body mass = 72.22 ± 3.46 kg, BMI = 22.62 ± 1.96 kg/m2). Results; Support the arm swing protocol used and statistics practiced. Our outcomes confirm the effects of arm movement on a player's jump performance. Accept the differences in record between the jumping tests used in this study. In the interests of bloc and spike at the last Sargent Jump compared with the box jump. Clam in this study through arm engagement and its impact on the jump player's performance, associated with neuromuscular coordination of the upper and lower-body segments. Recognized in similar as kinetic energy developed by the arms at take-off transfer to rest of the body during the later stages of the jump.

O17
PHYSICAL DEMANDS OF CROATIAN ELITE FOOTBALL REFEREES: FIRST VS SECOND HALF

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Football referees always need to be in a right position to make a good decision, regardless of the match time. Match demands are similar in both halves, but physical demands of referees depending of the half is not yet researched. The aim of this study is to compare physical demands of Croatian top-level referees in regard of the two halves of football match. 50 matches in elite Croatian football league were analyzed. Heart rate data, running speed and total distance covered were obtained using Polar V800 system. Average heart rate was statistically higher in first half (150.36 vs 147.32), while total distance covered was higher in second half (3986.19 vs 3901.33). Maximum speed and time spent in sprint running zone was higher in second half (24.64 vs 24.12; 263.17 vs 236.88 respectively), while average speed was higher in first (5.86 vs 5.47). Referees, regardless of the half, spent most of the game in medium intensity heart rate zone, and they cover most of the total distance in low intensity speed running zone. Although there are differences in physical demands between first and second half, we must conclude that high and maximum speed running is more often in second half. This must be in a relation with match ending, where every decision is match changing.

O18
A STUDY OF STRIKING CRYPTOCURRENCY PRACTICES IN SPORTS

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Nowadays, the development of technology and advancement in societies have led to innovations such as digital currency. Cryptocurrency is a digital asset that serves as a medium of exchange like a physical currency. Crypto is a relatively new player in the sports market that has brought novelty not only to sports teams and fans but also to many related sports bodies. This paper aims to clarify the concept of cryptocurrency, its usage forms in sports and to conceptualize its value and future based on some striking case studies carried out successfully by sport-related bodies. A case study approach was used to investigate the existence of cryptocurrency in sports. Data were gathered using a documentary research methodology. It can be said that cryptocurrency is an important

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aspect that is highly relevant for sports-related bodies. For instance, case studies revealed that different entities such as sports governing bodies, sports leagues, sports organizations, sports clubs, athletes, fans, and sporting goods businesses are engaging in various forms of cryptocurrency usage. Cryptocurrency is stepping towards to be very popular in the digital world and is regarded as a credible financial instrument. Therefore this research can be promising a springboard for facilitating all sports stakeholders regarding the dilemma of adopting/not adopting cryptocurrency as a mode of payment.

O19

A PLAYER EFFICIENCY APPLICATION FOR YOUTH BASKETBALL

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The aim of the research is to develop a player efficiency application for youth basketball. This research, which is design-based research, consists of the stages of planning, creating, and improving the design. Team development linear theory, goal setting theory, cognitive evaluation theory, social comparison theory, and Fogg behavior model were utilized in the design of the application. The statistics of 1556 (Xage: 17.73±.89) young male players from 99 teams in the last 5 seasons of the Basketball Youth League were used in the quantitative analysis. Furthermore, competitors were analyzed in terms of their technological features and target users in terms of digital statistics. The first version of the application design was completed. Five efficiency norms and percentages were developed for three variables (seasons, age, and position). It is expected that the app helps players track match performance statistics, set performance goals individually, and compare their performance with their peers.

O20

MOVEMENT FUNCTIONALITY IN YOUNG ATHLETES

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Evaluation of athlete's locomotor system functionalities is still in its infancy. A prominent battery for testing functional abilities is the FMS, which negative results are an indicator of suboptimal adaptability in the conditions of sports competition and represent increased risk of microtrauma muscle injuries. Pain, limitations, and asymmetries observed on the applied FMS battery can influence athlete's functionality. The research aims to show the prevalence of the presence of pain, limitations, asymmetry, and prevalence of combined dysfunctionalities in athletes. The research included 170 participants (age 17.4 ± 1.74 years), members of sports associations and national teams from the sports branches of basketball, football, and volleyball. The FMS test kit was used to evaluate the functional characteristics in the FMS battery. Frequency of variables pain, limitation, and asymmetry on individual FMS tests were analyzed, as well as dysfunction obtained by the combined value of individual variables. A prevalence of pain (1%), limitations (56%) and asymmetries (61%) were observed in the participants. Athletes showed the absence of combined dysfunctions (0%). There is a low prevalence of pain and a high prevalence of limitations and asymmetries, which can be caused by the manifestation of low basic mobility and stability in primitive movement patterns, as well as an inadequate degree of motor control in the patterns of higher-level movements.

O21

THE PREDICTING ROLE OF PERCEIVED PARENTING STYLES AND PARENT INVOLVEMENT IN SPORT ON PARENT-INITIATED MOTIVATIONAL CLIMATE

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This study aimed to investigate the predicting role of perceived parenting styles and parent involvement in sport on perceived parent-initiated motivational climate in adolescent athletes. Seventy-three females (Mage=14.45, SD=1.42) and 130 males (Mage =15.15, SD=2.02) adolescent athletes participated in this study. The Parental Involvement in Sports Questionnaire, Parenting Style Scale, and Parent-Initiated Motivational Climate Questionnaire-2 were administered to the participants. The authoritative style was determined as the reference point in the regression analysis conducted with categorical variables. Multiple hierarchical regression analysis indicated that authoritarian parenting style was a negative predictor of the mother (β=-0.39, $p<0.01$) and father (β=-0.41, $p<0.01$) task-involving motivational climates and a positive predictor of the mother (β=0.30, $p<0.01$) and father (β=0.24, $p<0.05$) ego-involving motivational climates. Regarding parent involvement, perceived praise and understanding predicted positively both the mother (β=0.49, $p<0.01$) and father (β=0.59, $p<0.01$) task-involving motivational climates, while the pressure negatively predicted mother task-involving motivational climate (β=-0.15, $p<0.05$). Furthermore, the pressure was a positive predictor of the mother (β=0.36, $p<0.01$) and father (β=0.27, $p<0.01$) ego-involving motivational climates. Lastly, the mother (β=0.22, $p<0,01$) and father (β=0.25, $p<0,01$) ego-involving motivational climates were predicted positively by active parental involvement. The findings suggest that parenting styles might affect the perceived motivational climate created by parents. The perceived authoritative parenting style might be the most appropriate attitude to provide a task-involving motivational climate. Also, while praise and understanding have contributed to task-involving motivational climates, the pressure significantly contributed to ego-involving motivational climates.

O22

PSYCHOMETRIC PROPERTIES OF THE TURKISH VERSION OF THE PICTORIAL SCALE OF PERCEIVED MOVEMENT SKILL COMPETENCE FOR YOUNG CHILDREN

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The pictorial scale of Perceived Movement Skill Competence (PMSC) is a tool to assess young children's perceptions of competence in fundamental motor skills. We aimed to test the validity and reliability of the pictorial scale of PMSC in Turkish children. A total of 255 children involving 131 girls and 124 boys aged 5 to 10 years (Mage=7.88, SD=1.77 years) participated in this study. The Turkish version of the pictorial PMSC were administered to

the participants individually at school. One week later, a random subsample (n = 40) completed the scale again for test re-test reliability. We conducted confirmatory factor analysis (CFA) to test construct validity of the Turkish version of the pictorial scale of PMSC and calculated the Omega (ω) internal consistency and intraclass correlation coefficients (ICC) to determine reliabilities of the subscales. CFA results provided good fit index values for the model with 13 items indicating similar factor structure with the original scale's two-factor structure (c2/df=1.56, RMSEA=0.048, TLI=0.97, CFI=0.97). The test re-test reliabilities were also found to be excellent for the locomotor and ball skills (ICC = 0.95, 0.93, respectively). Additionally, we found an adequate internal consistency coefficient for each subscale (ω=0.69–0.82). The Turkish version of pictorial PMSC is a valid and reliable instrument to measure perceived motor competence in Turkish children. This study was funded by TUBITAK # SOBAG 121K484.

O23
PERCEPTION OF PARENTS' INVOLVEMENT IN SPORTS ACTIVITIES OF YOUNG FOOTBALL PLAYERS

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The aim of this study was to examine perceived parental involvement in young football players. The participant were 143 young soccer players from four Dalmatian clubs. PISQ (Parental Involvement in Sport Questionnaire) which measures four dimensions of parental involvement: active involvement, praise and understanding, directive behaviors and pressure. All four scales have satisfactory metric characteristics for quality application on youth soccer players' sample. One-way analysis of variance (ANOVA) of age groups by perceived parental involvement showed significant statistical differences in praise and understanding scale. Post hoc Fisher LSD test showed significant statistical differences in praise and understanding scale between parents of 16 years old group of players and parents of 19 i 20 years old group. One-way ANOVA of beginning to train by perceived parental involvement showed significant statistical differences in praise and understanding and pressure scale. Post hoc Fisher LSD test showed that parents of players who started to train at the age of 4-6, use more praise and understanding than parents of players who started to train at the age of 7-8. Moreover, there was significant statistical difference in pressure scale between parents of players who started to train at the age of 4-6 and parents of players who started to train at the age of 7 and more. The results suggest that parents need to be supportive, and use more praise and understanding. Also, the coach – parent – child relationships very important to be at high level.

O24
ASSOCIATION BETWEEN COGNITIVE FUNCTIONS AND INCIDENCE OF SPORTS-RELATED INJURIES IN YOUTH WATER POLO PLAYERS

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Some previous studies suggested that higher levels of fatigue, as well as impairments in reaction time and cognitive function can contribute to the injury risk in athletes. The aim of this study was to investigate the association between cognitive functions and the incidence of sports-related injuries in youth water polo players. A total of 19 youth water polo players (14-16 years old) who attended the Croatian Water Polo Federation training camps participated in this study. Testings included cognitive functions assessment (Stroop test) and questionnaire about the incidence of sports-related injuries. Sports-related injuries were experienced by 14 youth water polo players (73.7%). There were no statistically significant differences in psychomotor speed (Stroop Off) and response inhibition (Stroop On) between players who experienced sports-related injuries and those players who did not. No significant correlations between the incidence of sports related injuries and cognitive functions of youth water polo players were found. The results of this study suggest high incidence of sports-related injuries among youth water polo players but there was no association with psychomotor speed and response inhibition, although it should be confirmed with higher number of participants.

Poster presentations

P1
THE EFFECTS OF SIX-MONTH PHYSICAL ACTIVITY PROGRAM SUPPORTED BY FASTING ON BODY COMPOSITION IN THE ELDERLY POPULATION

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The purpose of this study was set in order to assess the effect of physical activity supported by intermittent fasting on body composition in the elderly population. Forty-four elderly people were randomly assigned to experimental group (twenty-four of them) or control group (twenty of them). The sample of variables includes body height, body weight, waist circumference, percentage of body fat and body mass index. The descriptive statistics were expressed as a mean and standard deviation for each variable, while Independent-Samples T-Test was employed to explore differences between the means. The results showed that organized psychical activities supported by intermittent fasting did not influenced body composition significantly. However, a slight improvement in the participants of the experimental program was recognized for each parameter (body mass was reduced by 2.6 kg, waist circumference was reduced by 2.85 cm, percentage of body fat was reduced by 1.99 %, body mass index was reduced by 1.08 kg/m2), while this is not the case with members of the control group (body mass increased by 0.2 kg, waist circumference decreased by 0.02 cm, percentage of body fat decreased by 0.21 %, body mass index decreased by 0.09 kg/m2). Therefore, it is concluded the organized physical activities and intermittent fasting has proved to be useful for improving body composition in elderly people. This study has been done within a national project under the title "Effects of autophagy and physical activity on body composition, body mass index, stress, health behavior, cognitive abilities and social inclusion in the elderly (EAPA-BCH)" that was approved by the Ministry of Science and Technological Development in Montenegro (No. 03/1-062/20-346/2 from 28 April 2020), as well in line with the objectives of COST Action CA18136 – "European Forum for Advanced Practices (EFAP)".

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P2
PHYSICAL ACTIVITY DURING PREGNANCY: A SYSTEMATIC REVIEW

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It is well-know that obesity in pregnancy increases maternal and infant risk of adverse outcomes, while the physical activity is essential to maternal and infant health. From this reason, it is very important to promote benefits of physical activity to prevent possible health issues among pregnant women. This systematic review aimed to analyze the available literature on the use of physical activity during pregnancy and its impact on maternal outcomes. In accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, the search was undertaken in two international databases (PubMed and Web of Science) to identify the studies reporting the evidence-based recommendations for physical activity during pregnancy. A total of 1635 potential articles were identified, of which 22 articles were relevant for the qualitative synthesis reported that the pregnant women should dominantly do water exercise, aerobic exercise and stretching exercise, as well as lumbar stabilization exercise, nerve and tendon-slip exercise and resistance and strength training and perform it during whole time of pregnancy with moderate intensity. This study has summarized the knowledge from available literature as well as recommend some specific exercise programs; however, it is important to conclude that the everyday walking is the most relevant exercise if there is a lack of resources for performing other recommended exercises.

P3
DOPING IN ESPORTS IN MONTENEGRO: IS THERE ANYONE WHO HAS THOUGHT ABOUT IT SO FAR?

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Due to the explosive growth of esports competition and the emergence of a new esports industry, esports becomes a new phenomenon in scientific research as well. More and more studies analyze issues in the esports industry worldwide. One of the main problems is usage of artificial substances to improve human physical abilities during esports games. There are many studies that started systematically analyses to avoid this deviation in sports. It is scientifically confirmed that esports partially reflects sporting functionality, but it is so difficult to describe the line between what is allowed and what is not in the area of doping and anti-doping control in esports matches. Most scientists and practitioners are familiar with this problem in a large number of countries; however, it is the main question if the scientists and practitioners from Montenegro are familiar with this issue at all. The systematic review of the scientific literature (Web of Science) as well as review of the grey literature (Google) in the mention area showed that there is no studies considered doping and anti-doping control in esports in Montenegro at all, while the search of grey literature found no results too. Therefore, it is the fact there is no one who has thought about doping in esports in Montenegro so far, and it is so important if this study draws the attention of, both scientists and experts from practice, especially the officials of the Anti-Doping Commission of Montenegro whose official website does not even mention doping in esports.

P4
DISTANCE LEARNING OF SPORT TRAINERS: A SYSTEMATIC REVIEW

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The COVID-19 pandemic has changed education forever and put distance learning to the test as never before. Usage of distance learning has become a common part of academic lives in many settings, including sport settings. This systematic review aimed to analyse the available literature on distance learning of sports trainers carried out by accredited institutions. In accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, the search was undertaken in two international databases (Scopus, and Web of Science) to identify the studies reporting the distance learning preferences of sports trainers carried out by accredited institutions. A total of 237 potential articles were identified, of which 15 articles were relevant for the qualitative synthesis, while the sport trainers in most of selected articles dominantly evaluate their experience in distance learning courses as positive, just one factor highlighted as a negative (social interaction). Despite all the controversies that has arisen in the post COVID-19 period, this study can confirm that distance learning is an effective way when it comes to the education of sports trainers, primary because of many well-known advantages over traditional learning; however, the limitation is the absence of social interaction and physical meeting between educators and students.

P5
BODY COMPOSITION OF THE WATER POLO PLAYERS OF THE THREE NATIONAL TEAMS WHO PARTICIPATED IN THE OI IN TOKYO

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The aim of this research was to determine the differences between the water polo players of national teams of Montenegro, Serbia and United States of America in the body composition and anthropometric characteristics. Body composition variables (body mass index, fat percentage and muscle mass) were evaluated by Bioelectric Impedance type MC-980 and other anthropometric characteristics were evaluated by an anthropometer and caliper (body height, body weight, triceps skinfold, biceps skinfold, skinfold of the back, abdominal skinfold, upper leg skinfold, lower leg skinfold). ANOVA showed that there was a statistically significant difference in fat percentage. The LSD Post Hoc test showed statistically significant differences between the water polo players of the Montenegrin national team (13.3%) compared to the water polo players of the USA national team (16.7%). It can be stated that water polo players from Montenegro had a statistically sig-

nificantly lower fat percentage than water polo players from the USA and a lower level than water polo players from Serbia, but this is not statistically significant. Although the fat percentage is a disruptive factor in athletes, here it did not coincide with the result at the Olympic Games in Tokyo, because in the end Serbia won the gold medal, the USA was in sixth place, and Montenegro was in eighth place.

P6
SITUATIONAL EFFICIENCY OF CLUBS IN UEFA CHAMPIONS LEAGUE 2012-13 AND 2020-21

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Football as a sport is constantly changing and developing. Therefore, there are changes in situational demands in the game, which is confirmed by the scientific research. Main objective of this research was to define parameters of situational efficiency of the UEFA Champions' League group phase for 2012-13 as well as 2020-21 season. Secondary objective was to determine whether there are statistically significant differences in the variables between the teams that passed and those that did not pass the group stage of the competition. A total of 192 matches and 30 variables of situational efficiency of the group stage of the Champions League in two separate seasons were observed. T-test and ANOVA were used to determine difference between the teams that advanced pass the group stage and those that did not, as well as differences between the teams that made it to the elimination round of the competition in two separate seasons. The obtained results showed significant differences in certain variables between the teams that advanced pass the group stage of the 2012/13 and 2020/21 Champions League. These variables were: shots inside the box, average shots inside the box, passing accuracy, total number of correct passes, average correct passes. It could be concluded that the technical abilities of players have grown significantly in the past few years. This trend will probably be even more pronounced in the future.

P7
THE FINALISTS OF THE EUROPEAN WATER POLO CHAMPIONSHIP U17 IN MALTA AND THEIR BODY COMPOSITION

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The purpose of this research was to determine the differences in the body structure of the water polo players of the national teams Montenegro and Spain, who played in the Final of the European Junior Water Polo Championship under 17 in Malta. We measured body height and used the Bioelectric Impedance MC-980 to evaluated fat percentage. The measurement was made seven days before the European Junior Championship. It was determined that there are differences in the percentage of fat between the European champion Montenegro (12.3%) and Spain (12.7%), the European vice-champion, but they are not statistically significant. It can be concluded that the Montenegrin water polo players had a lower percentage of fat, but not statistically significant, and a similar level of other variables, which could be expected considering that these two national teams played the final in Malta, which Montenegro won by goal difference.

P8
THE EFFECTS OF CORRECTIVE EXERCISE ON THE STATE OF SHOULDER JOINTS AMONG CHILDREN IN EARLY ADOLESCENCE

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The results of numerous medical and kinesiological studies indicate that certain changes take place in the shoulder joints of children during early adolescence. The aim of this study was to determine the type, stage, and percentage of postural disorder of the shoulder joints, as well as the effectiveness of the applied corrective exercises on establishing the normal physiological position of the parts of this complex movement apparatus. The sample of participants included 110 boys and girls who made up the experimental sub-sample, aged 13±4 months, and 107 boys and girls who made up the control sub-sample, aged 13±5 months. A system of three measuring instruments was applied: scoliosis, kyphosis, and winged scapula (scapullae allatae). The experimental treatment lasted 17 work weeks (one session per week), and included the application of preventive-corrective exercises for the determined disorders of the shoulder joints. The results obtained indicate that most of the disorders occur during the initial, that is, functional stage. Kyphosis and winged scapula mostly occur at the same time, as integral disorders in most cases. Scoliosis was detected to a lesser extent, whereby its more significant presence was noted among the girls more so than among the boys. The experimental treatment yielded results in the sense of recovery of the disrupted shoulder joints, while no improvement was noted in the other stages. However, it was concluded that such states did not show signs of severe progression. An alarming state of postural disorders was noted in the shoulder joints among children in early adolescence, as well as the importance of applying preventive-corrective exercise programs that would be incorporated into regular physical exercise. The need for more detailed studies which would focus on the entire postural status of children, with a special accent on the critical periods for the emergence of deformities, was pointed out.

P9
DIFFERENCES BETWEEN FUNCTIONAL MOVEMENT SCREEN AND SOMATOTYPE TO YOUNG HANDBALL AND VOLLEYBALL PLAYERS

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Handball and volleyball are among the world's popular sports, which are played in practically every country at different levels of competition. The aim of this study was to determine the differences in somatotype and morphological characteristics between young handball players and volleyball players as well as the differences in the results of functional body mobility tests between the tested groups. The research included a sample of 23 athletes that was divided into two subsamples, as follows. A total of 12 athletes were from the Handball team and total of 11 athletes were from the Volleyball team. The results of the study in female handball players recorded a higher percentage of body fat and body mass index compared to female volleyball players, while no statistically significant difference was recorded in body weight and height. Analyzing the somatotype of players, it is noticeable that handball players have higher values of endomorphism and mesomorphism,

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while volleyball players have higher values of ectomorphism. Statistically significant differences were observed in mesomorph and ectomorph p <0.01. In the Functional Movement Screen test, it was noticeable that statistically significant differences were recorded in the two variables in favor of the volleyball players, as well as in the overall standings, while in the other variables no statistically significant difference was recorded. Determining the quality and speed of biological development of young athletes should certainly be included in the subject of the training process, regardless of whether it is a selection of players for top achievements or amateur sports.

P10
DIFFERENCES IN THE LEVEL OF NUTRITIONAL STATUS ELEMENTARY SCHOOL CHILDREN FROM CENTRAL REGION OF MONTENEGRO ACCORDING TO AGE

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Children's nutrition is one of the most important indicators of health, because it indicates adequacy process of growth and development, and can also serve as a prognostic factor of their future state of health, weight and obesity. The main objective of this work is to determine the differences in nutritional levels between students of older and younger grades of primary schools from the Central Region of Montenegro. The sample of respondents consisted of 100 students aged 7-8 years and 84 students 11-12 years old from Podgorica, divided into 4 subsamples according to the criteria of gender and age. Basic central and dispersion parameters were calculated for each subsample, while the level of obesity was calculated using the body mass index. Chi-square test was used to calculate differences between subsamples. The results showed that there are statistically significant differences between children of different ages, that is, girls and boys aged 11-12 years are statistically significantly less overweight and obese than boys and girls aged 7-8 years. The reasons for the obtained results can be found in the fact that the age of 11-12 years is in the period of early adolescence, and that they undergo changes in the growth phase, as well as in greater physical activity.

P11
PREVALENCE OF OBESITY IN 8-9 AGED CHILDREN FROM CENTRAL REGION OF MONTENEGRO

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Obesity is a chronic disease characterized by an increase in body fat mass, to the extent that leads to deterioration of health and the development of a number of complications. Also, obesity affects the reduction of the quality of life in direct proportion to the degree of obesity. The main objective of this research is to determine the prevalence of obesity in children aged 8-9 years in the Central Region of Montenegro. The sample consisted of 197 third-grade children from Podgorica (111 boys and 87 girls). The students were divided into 2 subsamples, according to the criterion of gender. Body height and weight were measured. Basic central and dispersion parameters were calculated for each subsample, and the level of obesity was determined using the body mass index. According to BMI, a total of 14% of boys were overweight and 19% obese, while the percentage of overweight girls was 17% and 6% obese. It can be concluded that the obtained percentages are quite high and worrisome, so measures should be taken to reduce them, considering the harmful effects and consequences of obesity on health.

P12
KINEMATICS PARAMETERS AND METABOLIC POWER IN ELITE SOCCER PLAYERS. SMALL SIDED GAMES

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The aim of this study was to analyze the kinematic parameters of three different format of small sided games (3v3; 5v5; 10v10) during 1 minute, among elite soccer players in Bosnia and Herzegovina. Data (total distance (TD), maximum speed (MS), number of accelerations (nAcc), number of decelerations (nDec), number of sprints (nS), high intensity distance (Z4 ≥ 19.8 km/h) , sprint distance (Z5 (≥ 25.2 km/h) and movements requiring a certain metabolic power (Pmet), were collected using a 20 Hz GPS system Pro2 (GPEXE, Exelio srl, Udine, Italy), on a total of N=307 of individual observations. The results showed that the average TD was significantly higher in the 5v5 (135.16±18.78) and 10v10 (133.43±20.06) games (F= 64.26, p= 0.00) compared to the 3v3 (108.24±11.26). Furthermore, the values of the variables Z4 (8.32±3.38, F= 97.59), Z5 (1.84±1.53, F= 123.64), nS (0.13±0.10, F= 96.14) as well as MS (27.06±1.90, F= 139.33), statistically significantly higher (p= 0.00) in the 10v10 game compared to the other two game formats. The average number of nAcc (0.40±0.32, F= 9.86, p= 0.00) and nDec (0.62±0.36, F= 6.42, p= 0.00) is statistically significantly higher in the 5v5 game. The results showed that the 5v5 game is significantly more metabolically demanding, Pmet (2.76±0.67, F= 66.08, p= 0.00) compared to the other two game formats. The data presented in this study can serve for future analysis and comparisons and represent a scientific basis for constructing and programming specific training exercises in football.

P13
ACUTE INFLUECE OF VARIOUS INTENSITY TRAINING ON CD14++CD16- MONOCYTES ACTIVATION

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The benefits of regular physical activity are well known, but its effect on immune response is not cleared yet. The aim of this study is to determine possible influence of various intensity training on acute pro-inflammatory monocytes activation. Ten male recreative runners were tested, using spiroergometric ramp test, to determine their individual gas exchange threshold (GET). Afterwards the subjects were tested three times with three different intensitys (intensity GET, intensity GET– 10% and intensity GET +10%) and perform a 20-minute training during which the blood samples were collected. Using flow cytometry method blood samples were used to analyse CD14++CD16- monocytes activity. Results have showed that physical activity affects on pro-inflammatory monocytes activation, and that there is a connection between

intensity and monocytes activation. Our results also suggested that time of blood sampling and the number of tested subjects have an influence on results. Recreative running with intensity around aerobic threshold affects on CD14++CD16- monocytes activation. But for better understanding of intensity influence, different blood sampling times and bigger sample should be consider.

P14
ATTITUDES OF CLASSROOM TEACHERS TOWARD PHYSICAL EDUCATION

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The teaching of PE is necessary in schools because it is important for proper growth and development, especially due to the modern tendency of decreasing physical activities of children. The main goal of this paper is to determine the attitudes of classroom teachers towards the role of PE. The sample of respondents consisted of 19 classroom teachers from Niksic. We used a standardized questionnaire adapted for this research (SecondaryPETeacherSurvey) for the research. Descriptive statistics were used to process the results. The results showed a positive attitude of teachers towards teaching PE. Most teachers believe that PE is a very important subject for students of all ages in school, and that children shouldn't be exempt from PE classes. The basic criteria for assessment are regular work in classes and mastering of basic motor skills. Also, children are active for more than half of the class time, and basic data on the physical parameters of the students and their state of health are also collected, in order to improve the teaching. The obtained results showed a high level of awareness of the importance of PE classes, and regular physical education classes provide children with regular physical activity, and in return a healthier population is obtained, which physically feels better, and therefore young people would be more satisfied in every segment of his life.

Workshop presentations

W1
The European Fitness Monitoring System (EUFITMOS): an overview of the project development and outputs

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Physical fitness is one of the most relevant indicators of child and adolescent health and wellbeing. Despite the EU recommendations for monitoring PF and using it to inform policymakers on health-enhancing physical activity (HEPA), fitness levels have not been given adequate attention outside of scientific research. In line with this fact, EUFITMOS project was developed. The main goal of workshop: To familiarize conference delegates with a new European framework for monitoring fitness in children and adolescents and promote its use as an indicator of HEPA. Conference delegates will get acquainted with the three-year long life of the project as well as its development and main outputs. Specific goals: Three main project outputs resulted: 1) the EUFITMOS fitness battery, 2) the teacher training module and toolkit, and 3) the EUFITMOS online platform. Developing the EUFITMOS fitness battery sought to capitalize the knowledge of existing fitness batteries and tests to produce a feasible (simple to execute in the school setting and low cost on resources) yet complete (encompass the most important health-related fitness components) fitness battery. An online toolkit, including the EUFITMOS fitness testing protocol and support videos and audio, was elaborated to support the implementation of the EUFITMOS fitness battery. The EUFITMOS online platform is a user-based platform containing the EUFITMOS physical fitness database and analysis and visualization resources that inform young people's fitness levels. With a wide and consistent implementation of the EUFITMOS fitness battery, the goal of having comparable, valid, and reliable physical fitness data available as an indicator of HEPA at the European level can be achieved.

W2
Motor Asymmetry in Sports – Testing

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Whereas the human body seems symmetrical, functional asymmetry is the main principle of the movement functions. People prefer to use one hand and/or foot as opposed to another for some certain tasks. Thus, some asymmetry occurs to perform those tasks between the limbs. The dynamic-dominance hypothesis of motor lateralization by Sainburg (2002, 2005) states that the left hemisphere is specialized for predicting body and environmental dynamics, while the right hemisphere is specialized for impedance control to be accurate steady-state positions (in right handers). This model implies an asymmetry between the limbs to perform some tasks. In sports, less asymmetry between the limbs is more preferable by the trainers or coaches (Loffing, Hagemann, Strauss, & MacMahon, 2016). This way, an athlete can gain a tactical and/or technical advantage over her/his opponent. Supporting this idea, less asymmetrical motor performances were observed in many sports including fencing (Akpinar et al., 2015; Witkowski et al., 2019), basketball (Akpinar, 2016; Stöckel & Weigelt, 2012), football (Akpinar, 2022; Teixeira et al., 2011), and rowing (Akpinar, 2015). It could be beneficial for the athletes to use both sides of their bodies, both tactically and technically. This may surely create a disadvantage for their opponents. The main goal of workshop: To understand and get to know different procedures for testing motor asymmetry. Testing motor performance asymmetries regularly to observe the improvements of the athletes and motivate them to use the non-dominant limb during the training and game would be very helpful for their personal development. Specific goals: There are many ways to measure the asymmetry of the motor functions. In this workshop, I will try to address most used ones and give one example of the measurement system.

W3
Movement system screen – the first step to starting an exercise program or increasing physical activity

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Possibility of quickly identifying pain or limitations of movement system, movement health, symmetry and function could be of critical importance for improving the overall scope of performance, fitness, rehabilitation and management of injury risk in active individual. Having a simple screen system that could grade how well our movement system works would lead to better decisions on how to enhance the individual's workout or training

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plan. The main goal of workshop: To familiarize participants with functional movement screen protocol, a baseline for fundamental movement competency. Participants will learn how to quickly identify pain or limitations that need to be addressed using seven fundamental movement patterns. Specific goals: Participants will learn why do we need the movement system screen through presenting principles to support the importance of movement screening. To understand where is the place of the screen in the movement evaluation system. Through the explanation of seven basic movement patterns, demonstration tests, and meaning of results, participants will became familiar with protocol of movement system screen.

W4

Modern systems for monitoring fitness in children and youth of school age

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General goal of the program: The general goal of the program is to familiarize physical education teachers and classroom teachers with modern fitness monitoring systems for children and youth of school age. Specific goals of the program: The specific goals of the program relate to physical education teachers and classroom teachers becoming familiar with the trends of fitness development in school-age children and youth over time, with all available field tests for monitoring fitness in school-age children and youth, as well as to be able to apply the "EUFITMOS fitness testing protocol", a modern system for monitoring fitness in children and youth of school age, and to apply the acquired knowledge and skills in future theoretical and practical work. Target group: Physical education teachers and classroom teachers from Montenegrin primary and secondary schools. Work methods and techniques: Interactive lectures, workshops, practical work in the sports hall. Topics: [1] Trends in the development of fitness among school-aged children and youth over time - a systematic review of the literature; [2] Field tests for monitoring fitness in children and youth of school age - a systematic review of the literature; [3] "EUFITMOS fitness testing protocol" - theoretical description; [4] "EUFITMOS fitness testing protocol" - practical presentation. Method of realization of the program: Immediate. Duration of the program (number of days and number of hours of effective work): The program is planned to last a total of eight hours (four lectures, i.e. workshops) during one working day. Number of participants in the group: maximum 40 (limited number of places).

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