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Nutrition particularities for rugby players. A strategic approach of a nutritional program within national rugby teams for 2017-2023

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Rugby is a sport that requires strength, agility, speed and concentration. The rugby game is characterized by frequent moments of direct body contact which involves maximum force use, periods of high intensity running, but also moments of slow jog and recovery. The energy needs are covered largely through anaerobic mechanisms. On average, the energy needs of a rugby player, during training and competition periods stands around 5,000 kcal/day. The most important nutrients in rugby players' nutrition are carbohydrates, followed by proteins. Hydration plays an important role for athletic performance in rugby. The competition takes place outside, aspect which will impose a fluid ingestion adaptation, depending on climate. Frequent trips may represent a nutritional risk if a good meal planning is not imposed, both in terms of content and schedule. The nutritional intake of the athletes can be controlled during training camps. Most frequently, the athletes establish their diet alone. Nutrition education is essential to ensure that athletes will follow an adequate diet when outside training camps. A good nutrition plan throughout the year, not only during competition periods, will have a significant contribution to achieve high performance.

To provide nutritional knowledge which is required by athletes, we outlined a program of nutrition for professional rugby players, consisting in transmitting practical information through various channels and methods: a Practical Nutrition Guide for rugby players, workshops, questionnaires to assess nutrition habits, establishing nutritionally balanced menus for training camps periods, communication through digital channels.

Key words: *rugby, nutrition, athletes, program, planning, guide, training.*

The utility of exercise testing in the assessment of functional professional capacity

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A good physical fitness is fundamental for optimal coping with the professional work requirements. The cardiovascular exercise testing has proved to be a valuable and broadly utilized clinical assessment tool in estimating functional capacity related to professional activity. Conducted in various technical forms, cycle-ergometry or treadmill, the exercise testing affords an objective measurement of the level of the functional limitation in active working individuals. $\dot{V}O_{2max}$ is the best non-invasive measurement of the exercise capacity of the cardio-vascular system.

Other prognostic markers identified in exercise testing are the maximal exercise duration, maximal MET level achieved, maximum workload achieved, or maximum heart rate and heart rate–blood pressure product. Interpretation of the exercise testing from the vocational perspective basis lies on matching the individual's performance with the physical work demands.

Exercise testing is not only meant for evaluation but also as a valuable tool for promoting vocational rehabilitation and return to work after acute cardiovascular events.

Non the less is the prognostic significance of the exercise testing valuable. Exposing the individual to heavy, unfitted work can result in severe cardiovascular conditions, even sudden cardiac arrest. When risk category is defined according to the exercise testing interpretation the probability of any complication is decreased and promotes safety and health at the work place.

Conclusions. The cardiovascular exercise testing is a valuable tool in assessing functional capacity related to professional activity as it is recommended as an initial evaluation, for reassessment as well as for cardiovascular and vocational rehabilitation.

Key-words: *exercise testing, work capacity assessment, cardiovascular rehabilitation, vocational rehabilitation.*

The influence of global active stretching (SGA) in professional sports

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Global Active Stretching (SGA) is a myofascial stretching technique that comes from the Global Postural Reeducation (RPG). SGA has a very important role in RPG by preventing the appearance of pathological processes, improving and maintaining the results obtained by using this therapeutic approach. The retraction of the tonic postural muscles represents the prior pathophysiological condition of the skeletal muscles. Its morphological effects are quite evident and the result is often the functional impotence. This concept is most fundamental, leading us in taking in consideration the new concept of muscle weakness caused by the rigidity redundancy which, in case it becomes chronicle, will be the baseline of all pathology encountered in every sportsman's life.

SGA is a progressive and active beneficiary method which can be applied to patients in every state of age, taking in consideration each person's potential. While the other classic physical therapy methods concentrate only on certain part of the body with SGA, we can treat the body as a whole, in a global way and in the same time working with the patient actively, making him a protagonist in their own recovery process.

The vertebral joints and discs don't only carry all our body's weight, but also work as a pintle, so that each muscle can apply its own action with the purpose of helping throughout movement or keeping us in a straight position (against gravity). The reinforcements in excess of a muscle contribute to a muscle's disequilibrium, to a deformed alignment and compression of the joints which creates the origins of pain and degenerative syndrome. While treating a painful joint in using SGA method it is important to release the axial pressure and to give back the elasticity of the muscles round the joint that kept the joint in an incorrect position with excessive tension, by using decompression techniques. In brief, the purpose of SGA method is to restore the normal intraarticular space by using mild and progressive decompression techniques.

Key words: *skeletal muscles, muscular balance, stretching, decompression techniques.*

Study regarding the effect of the extracorporeal shock wave therapy in sports pathology

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Introduction. Sport injuries are often the reason for a presentation in a rehabilitation service. Modern therapies include different types of physical therapy combined with local specific technics.

For every sportsman, but especially for athletes, each inflammation process is a burden and must be solved immediately. The rest period needs to be shortened so we are in a permanent search for new pain therapies.

Extracorporeal shock wave therapy (ESWT) is indicated in pathologies associating different types of tendonitis. ESWT has a good effect on pain and functional impairment after a mild to moderate tendon lesion or a tendonitis. *Material and method.* We have studied the effect of ESWT on 22 out-patients with supra and infraspinatus, biceps or achilian tendinopathy, lateral or medial epicondylitis treated in our clinic between January and April, 2017. They suffered mild to moderate injuries during sport activities (tennis, football, skandenberg, air soft) and came for pain management and functional improvement. We used Visual Analog Scale and range of motion assessment before and after the treatment. The patients had 3 to 5 therapeutic sessions in a period of 2 weeks to one month. *Results and conclusions.* Short term results have shown for all of them a statistically significant improvement of pain without a significant improvement in function. The limitations of our study were the low number of patients, the absence of a follow-up period, the lack of a comparative study with different interventions but with similar aim.

Key-words: *extracorporeal shock wave, tendonitis, sports, rehabilitation.*

Point-of-care athlete testing in high performance sports, a valuable option

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POCT has modified the approach to athlete's evaluation, linking sport performance and physiological parameters to the metabolic substratum, basal conditions, functional costs and providing reproducible exercise /functional capacity descriptors. Such tests are not as reliable as laboratory tests, but often have greater validity because of their greater specificity. A combination of regular field based test (because of the practical, and immediate nature of testing) together with occasional laboratory testing (because of accuracy, reliability and quality) is a good option for most sports.

Creating a personal profile for high level athletes, during trainings and races, is another major target. We tried to define and control the levels of exercise intensities (energy training zones), to calibrate metabolic functionality (sports specific energy sources, baseline conditions, functional costs of exercise in specific conditions) and to evaluate post exercise recovery.

Concluding about our results, in baseline condition, blood acid-base status, blood lactate and metabolic costs characterize the condition. During exercise, we found several levels of metabolic acidosis plus different degrees of respiratory compensation and subsequent costs.

We found that POC testing in sport specific conditions is a powerful tool in taking training decisions; acid-base status, as a metabolic fitness index can monitor exercise and create a personal profile. Ability to monitor sport specific trainings becomes critical: POCT seems to regulate metabolic sport specific conditioning. Changes in resting bicarbonate levels over time give an indication of anaerobic adaptation. All this informations helped us to understand the differences between athletes, areas for improvement, and the importance of this area of physiology.

Key words: *athletes testing, sport performance evaluation, point-of-care testing.*

The type 1 diabetic athlete – between newest recommendations and current reality

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The type 1 diabetic athlete represents a particular entity that still poses considerable challenges for their health-care team. Despite several observational studies and few clinical trials focused on type 1 diabetic athletes, the increasing number of patients engaging in professional sports competitions led to the development of a recent consensus statement regarding exercise management in this medical condition.

In order to maximize the exercise performance, individualized nutritional recommendations specific to the sporting activity together with a modified insulin plan to match the increased nutritional requirements is needed. The glycemic management requires frequent glucose monitoring, adjustments to both basal and bolus insulin dosing and carbs consumption prior, during or after exercise. The use of modern insulin therapy devices like continuous subcutaneous insulin infusion is associated with reduced hyperglycemia after exercise compared with multiple daily insulin injections, but can create frustrating challenges for sports that might require disconnection of the insulin pump. The novel continuous glucose monitoring systems (CGMS) have an important role in maintaining the euglycemia during and after exercise by providing comprehensive information on blood glucose concentrations, real-time trends and rates of change. Despite the reasonably accuracy for exercise, the lag time in glucose equilibrium with the interstitial space and the rapid turnover in glucose during exercise might limit its use.

A sound understanding of the physiology of different forms of exercise and the variables that can influence glycaemia during sport should underpin the implementation of the safe and effective glycaemia management strategies.

Key words: *athlete, type 1 diabetes, sport, insulin pumps, glucose monitoring systems.*

The podiatry role in the foot care

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The podiatry is a medical specialty that is focused on the study, prevention, diagnosis and medical and surgical treatment of disorders of the foot, ankle and lower extremity. While in English-speaking countries, the term used for the specialists is chiropodist/podiatrist, in many non-English-speaking countries of Europe, the title used may be podologist. Depending on each country, the podiatrist may have different competencies. The conditions podiatrist treat include: bone and joint disorders, soft tissue and muscular disorders, as well as neurological and circulatory disease. The American Board of Podiatric Orthopedics and Primary Podiatric Medicine (ABPOPPM) offers a comprehensive board qualification and certification process in podiatric medicine and orthopedics as: consultant podiatric surgeon, general podiatric physician, podiatric sports physician, neuro-podiatrist, podiatric vascular specialist, podopaediatrics, forensic podiatry, etc.

When mentioning diabetes, the podiatrist is the key element in the multidisciplinary team of diabetic foot care. Previous studies have clearly showed that podiatric intervention reduced up to 75% and 4 times the amputations and respectively the mortality rate.

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Sport podiatry involves the expertise in diagnosis of foot and lower limb problems as well as treatments such as joint mobilisation, advanced biomechanical assessments, injection therapy such as Prolotherapy and PRP (Platelet-Rich-Plasma), soft-tissue manipulation and trigger point therapy, advanced functional orthotic therapy, exercise rehabilitation, exercise prescription of the lower extremities and footwear prescription for the professional, elite, amateur and young athletes, as well as those who have sustained injuries in day-to-day life.

Key words: *podiatry, diabetes, sport, therapy.*

Ventricular arrhythmias in elite athletes – from the premature ventricular beats to *paroxysmal* tachycardia

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An underlying structural cardiac abnormality is found in most cases of life-threatening ventricular arrhythmias and sudden cardiac death during sports. *“A variety of ventricular arrhythmias can occur in athletes. The appearance of any ventricular arrhythmias requires Pre Participation Evaluation (PPE) before clearance for participation in athletic activity”*.*

Minimal level of testing to complex evaluation, are indicated for all ventricular arrhythmias (premature ventricular beats to complex ventricular tachycardia) for exclusion of cardiac diseases responsible of sudden cardiac death /arrest. Complex tests including Contrast-Enhanced Cardiac Magnetic Resonance, detect subtle structural heart conditions - myocarditis, segmental cardiomyopathies and right ventricular outflow tract scar - responsible for arrhythmic cardiac arrest. The most appropriate management strategy for correct diagnosis requires the eligibility PPE and specific cardiovascular tests.

Key words: *ventricular arrhythmias, athletes, sudden cardiac death.*

* Douglas P Zipes et al. Eligibility and Disqualification Recommendations for Competitive Athletes with Cardiovascular Abnormalities: Task Force 9: Arrhythmias and Conduction Defects: A Scientific Statement From the American Heart Association and American College of Cardiology. *Circulation* 2015, November; 132:e315-e325

Physical Profile of Romanian Elite Youth Players (U16 – U17)

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The aim of this study was to give provide a better understanding of physical profiling of Romanian elite Football Players U16-U17 in relation to their playing position on the field. *Material and Method.* The sample was made of 49 U17 (177.11cm ± 6.63cm; 67.88kg ± 5.76kg) players and 75 U16 (175.64cm ± 7.86cm; 64.69kg ± 6.9kg) players, all playing at an elite youth level. Players were split by age group and position as reported by the Coaches, Goalkeeper (GK), Central Defender (CD), Full Back (FB), Central Midfielder (CM), Wingers (W), Strikers (ST). The participants performed a set of tests, assessing their speed (30m, timed at 5m and 15m as well), agility (Illinois Agility Test and Pro Agility), lower leg power (counter-movement jump) and intermittent endurance (Yo-Yo Intermittent Recovery Level 1).

Results. Countermovement Jump: U17 – CM – 40.84 ± 3.31 cm; U16 - ST – 40.57 ± 3.88 cm. Speed: 1. 5m: U17 – CD – 1.02 ± 0.05 sec; U16 – CD & ST – 1.01 ± 0.03 sec. 2. 15m: U17 – CD - 2.39 ± 0.07 sec; U16 - ST – 2.39 ± 0.06 sec. 30m: U17 – CD - 4.19 ± 0.93 sec; U16 – ST – 4.2 ± 0.13 sec. Pro Agility: U17 – FB - 5.44 ± 0.22 sec; U16 – ST – 5.67 ± 0.23 sec. Illinois: U17 – FB – 14.97 ± 0.4 sec; U16 – FB – 15.89 ± 1.14 sec. YoYo Intermittent Recovery Test: U17 – FB - 53.8 ± 3.52 ml/kg/min; U16 – W – 51.67 ± 3.58 ml/kg/min.

Conclusion. Given the limited sample players tested, the physical profile of the youth elite players in Romania is just starting to take shape. For further research, larger samples of players should be recruited to

be tested, from more varied age groups. Retests should be included to see how exercise prescription and individual training programs impact player performance.

Key words: *football, fitness, testing, YoYo, speed, agility, countermovement.*

The biorhythm – an adjuvant method to sustain the performance in sport

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Introduction. The biorhythm is, as defined by the DEX as the rhythm of the organisms' activity, conditioned by individual biological characteristics, the daily lifetime based on the individual characteristics. The theory of biorhythm was developed at the beginning of the XX century by Hermann Swoboda, psychologist and professor at the University of Viena, Wilhelm Fliess, numerologist, and Alfred Teltscher, professor at Innsbruck University. Their research elicited iterative, discrete courses, with different lengths of time: 23 days, 28 days and 33 days. The 23 days cycle is bodily, the one of 28 is emotional and the third, 33 days, is linked to mental and intellectual state. These cycles might be calculated according to one's birthday and might be drawn, on a graph of signal strength plotted against time. The result was a sinusoid curve for each cycle – one positive and one negative peak and a neutral point - which means information in advance about the status of an individual to a spot-on time. *Method and data.* I used the biorhythm calculations for the gymnasts participating in the Gymnastics Individual Championships Cluj-Napoca, April 2017, who suffered injuries during their trainings or competition. *Results and conclusions.* For the involved gymnasts there is a possible connection between biorhythm and their individual sportive performance. This is why, I see biorhythm as a useful tool to improve and sustain the sportive performance.

Key words: *biorhythm, gymnasts, injuries, sportive performance.*

The psychology of sport injuries and medical conditions at the beginning of a new Olympic Cycle

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Every beginning of a new Olympic Cycle represents a great opportunity for analyzing, evaluating and reevaluating the self and the performance in order to ensure an efficient start for the next four years. In order to avoid the incidence of repetitive issues related to sport performance, it is recommended to know and to understand the psychology of injuries and medical conditions, fact that shapes the athlete both as a person, but also as an individual engaged in the sport performance process.

The foundation of every significant issues related to sport performance stands in the traumatic history of the athlete, especially in which it concerns the sport injuries that are both psychical and emotional traumas.

The examples and the case-studies presented try to define the emotional part of the physical trauma and to emphasize the role and the importance of medical and psychological analysis and evaluation at the beginning of the Olympic Cycle, considering the fact that the traumatic nature of an event is usually determined by the signification given by the athlete.

The issues related to performance have a cyclic nature; traumas lead to symptoms which finally lead to other traumas, mainly expressed by injuries and medical conditions.

Key words: *Olympic cycle, psychology, injury.*