before contest and we have compared to these after contest. Analyzing the results and the statistic data, we found an increase of hart of 12 % the day before contest and increases of systolic blood pressure of 27 % and average blood pressure of 14 %, compared to those after contest. We have noticed a decrease of prejection period of 5 % and increase of the left ventricle ejection period of 3 %; this means an increase of cardiac contractibility.

These modifications are explained by sympathetic stimulation due to the stress before contest. This tress produced reversible and admissible limits reactions and there is no need of correction measures.

23.BLOOD LEVELS OF SOME ELECTROLYTES AND HORMONES DURING EXERCISE IN ATHLETES

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Athletes (8 trained medium and long distance runners) have been explored before and after physical exercise under two testing procedures.

In the first one the subjects were submitted to exercise on a bicycle ergometer, beginning with a load of 150 W, increased every minute by 50 W to exhaustion.

Before and immediately after the exercise the levels of calcium in serum, of magnesium in serum and erythrocytes (spectrophotometric methods) and of cortisol, thyroxin and triiodothyronine (by RIA) have been measured in the blood samples.

In the second procedure the athletes performed several runs with maximal intensity, for 30 minutes. Before and after the test the same blood variables have been determined.

The Psychological Beech inventory aimed to measure stress through four scales with items concerning coping, life events, neuroticism and type a behavior pattern.

Results. After the ergometric test significant increases of Ca^{++} and Mg^{++} in serum and a significant decrease of Mg^{++} in erythrocytes occurred. A marked increment of cortisol level and lesser changes of the thyroid hormones have been found. After the specific training program, apart the significant reduction of the erythrocyte Mg ++, a very significant increase of the cortisol level and large increments of T_3 happened.

All subjects showed good coping resources, with interindividual differences of the other three variables.

The shifts of Mg^{++} between serum and erythrocytes comprise several causes, related to metabolic processes.

The changes of cortisol level and of the thyroid hormones especially in the experiment 2, are related to the adaptive processes during exercise stress.

24. THE EVOLUTION OF BODY COMPOSITION DURING ONE YEAR PRACTICE IN THE ROMANIAN OLYMPIC FEMALE AND MALE ROWING TEAMS

Authors: Anca Ileana Gurau, M.D., Denis Paduraru, M.D., Eduard Bejan, M.A.

Body composition is a basic element among the somatic biotype parameters analyzed in top-performance sport.

Measuring bodyweight represents a referential element in characterizing the somatic biotype, which allows for distributing athletes in the following categories: subweight, normalweight and overweight (when relating the subject's weight to the high), but does not give any information on lean body mass and fat tissue.

When measuring fat tissue skinfolds and applying Key-Brezec indirect calculation formula adapted by IMS Bucuresti, the analysis of the body composition results in percentage values for the fat tissue and the active mass thanks to a simple but extremely significant methodology.

The experience treasured for over 30 years at IMS Bucuresti as regards the body composition, finding out the optimal weight per training period, as well as the final weight checked-up within major events like World Championship and Olympic Games

enables us to consider that, at present, calculating the body composition is indispensable in following the evolution of the sporting form.

Sports training for rowing observes a yearly cycle and a specific methodology structured into various periods. The year long training cycle consists of a 10-12 months period, starting in November and ending in August the following year, after the major competition (World Championship or Olympic Games). With a harmonious blend of strength training, running for increasing the aerobic capacity and a specific training during winter (in the water-tank and on the simulator) and in summer (in boat on water), the rowers reach their peak in August and able to get medals in international competitions.

The note that for rowing this working methodology has been improved along the years and within this process the calculation of the body composition represented a confirmation of the fact that the training process carried out in adequate conditions.

The evolution of the body weight by gaining only in the active mass along the sports training period proves that the human body responds in a different way in the case of a common person than in the case of a top-level athlete.

25. HORMONAL RESPONSE TO STRENUOUS TRAINING IN ROMANIAN FEMALE OLYMPIC GYMNASTS

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Fourteen top female gymnasts took part in a study to document their hormonal profile and to investigate any possible changes resulting from a 4 months program of strenuous training and daily supplementation with soy protein (1g/kg). They had a mean age of 14.9±1.3 years, a mean height of 144.2±2.1 cm and mean body mass of 33.1±1.1 kg. They were randomly assigned to one of two groups: 7 to the treatment group (group A) and 7 to the control group (group B). Both groups took part in the same program, which consisted of strenuous training for 4-6 h/day, controlled food intake and supplements such as vitamins and minerals.

Group A received a supplement of soy protein (1g/kg/day) and group B received a placebo identical in appearance and flavour. Hormonal parameters were measured before and after 4 months training program: serum levels of T3, T4, estradiol, progesterone, prolactin, testosterone and urine 17-ketosteroids.

Group A had an increase in serum levels of prolactin ($p<0.01$) and T4 (not significant). Group B had a decreased level to serum T4 (not significant). Our preliminary conclusions suggest that elite female gymnasts undergoing strenuous training, who received daily supplementation with soy protein experience lower hormonal stress.

26. OSTEODENSITOMETRIC INVESTIGATIONS (QCT) IN SPORTSWOMEN

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Purpose: *Sport is classically associated with beneficial effects on the skeleton. Physical activity in growing children causes an increased bone density, this being more important than calcium intake. Teenagers are recommended to practice sports for capitalizing at maximum the gain in acquired total bone mass.*

Hypogonadism during this critical period may have deep effects on bone mass development and may affect the peak bone mass and the content of accumulation in each bone unit. During mid 80's, numerous publications have reported a decreased bone mineral density in the sportswomen.

Method and Materials: *The study included 37 sportswomen practicing various sports. Vertebral bone mineral density (BMD) was determined by quantitative computed tomography (QCT) and was compared with the Romanian age and sex-related standards. The sportswomen were practicing athletics, rhythmic gymnastics, boating, handball, volleyball, body building.*

Results: *BMD values lower on average by 11.3 % were found in 4 of them. Out of these, one presented disturbances of menstrual cycle with spaniomenorrhea previously treated with Orgametril®. At this sportswoman, the value of BMD was*

significantly decreased, - 28.8 %. In the remainder of cases, the obtained values were within normal ranges in 16 cases, and above the standard in 17 cases, on average by +25 %.

Conclusion: *The sport of performance through an insufficiently known mechanism, may induce osteoporosis of spine.*

- *Computed tomography, spiral*
- *Gynecologic diseases*
- *Bone mineral density*
- *Osteoporosis*
- *Bone computed tomography*
- *Quantitative imaging*

27.EUSTRESS AND DISTRESS IN ATLETES

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The construct of stress, described by physiologists (Cannon and Selye) and developed by psychologists (especially by Lazarus), is now a hot area of multidisciplinary and interdisciplinary bio-psychosocial research.

Among the present day most studied directions are the mechanisms of stress, particularly emotions and oxidative processes, the methods of assessment, the management techniques and a systematic description of various types of stress, including the occupational one.

Of major interest for us is stress in athletes and the analysis of both aspects outlined by Selye, namely "eustress" with positive outcomes and "distress" with negative connotations.

Eustress in athletes, related to moderate exercise, well prepared by training and motivated, may cause arousal, focus attention and act as a performance enhancer in several types of sport activities. This opinion is sustained by the positive effects of