HYPERTENSIVE RESPONSE AND PHYSICAL ACTIVITY

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OBJECTIVE

To establish a multicentrical study protocol in order to value the predominance of the hypertensives responses in our sportsmen and its multifactorial analysis.

MATERIAL AND METHODS

A population of 76 sportsmen (22% women and 78% men, ages between 15 and 27 years old) has been used. They were made: general and specific anamnesic questionnaire, related to possible agents which could have an effect on the blood pressure (BP) response. Exhaustive physical exploration, being rejected any electrocardiographic sign of letf ventricle hypertrophy (LVH). Isometric effort test and dynamic ergometric test (cycloergometre), with a standardised data capture of heart rate and blood pressure to 6 minutes of recuperation, in both modalities.

RESULTS

We have found 14 hypertensive responses (18,42% of the studied population). We have studied different parameters in the 2 resultant populations (normal response [NR] and hypertensive_response [HR]), founding out significative differences in some biomedical aspects and also in qualitative aspects of the sports training.

	Weight	BMI	Musculation	Water Sp.	HBP Antec.
NR	68,2+ 10,54	22,4 +2,48	51,61%	30,64%	16,12%
HR	76,3+ 7,44	23,4+ 2,00	78,57%	64,28%	28,57%
T-Test	0,001	0,05			

CONCLUSIONS

1- There have been identified different parameters which clearly distinguish between the population with hypertensive response and the population with normal BP response.

2- With those indicators we pretend to establish a sportsman outline with more risk of having an hypertensive response to the effort and so of developing an essential HighBP.

3- This study will be completed with a deeper analysis of the different valued agents and observing, in a longitudinal way, the behaviour of the basal BP and also with the different types of effort.

Key words: Physical activity. Blood Pressure. Hypertensive response.

EXERCISE AND LIFESTYLE MODIFICATION IN THE TREATMENT OF HYPERTENSION

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It is generally accepted that obesity, inactivity, hypertension (HTN), and blood dislipidemia are related to cardiovascular diseases. At the Wingate Institute for Physical Education and Sport we examined the effect to exercise and diet on hypertension.

A total of 253 men (39%) and women (61%) participated in a 4-week program for lifestyle modification. The program consisted of 3 hours of graded exercise (walking, bicycling and swimming) and weight lifting, and a daily 1-hour lecture on nutrition and health-related subjects. Caloric intake was 1200 kcals for women end 1600 kcals for men. Preparticipation examination included medical history, physical examination anthropometric measurements, stress test, blood tests, and RMR. The examination was performed at the beginning at the end of the 4-week program. Average age was 39.6 yrs (range 18-75), average BMI was 35.6+8 kg/m2 in women and 38,9+ 6,5 kg/m2 in men. Initial weight was 103 kg for women (range 60-140) and 125 kg for men (range 75-179). After 4 weeks the average weight loss was 6.1 kg for women and 8.2 kg for men. After the initial 4 weeks at Wingate they continued with the diet and 60-90 minutes daily exercise. Blood pressure was measured once a week thereafter.

The following table shows blood pressure before and after 8 weeks of lifestyle modification.

In conclusion, exercise combined with diet is a relatively quick and powerful tool in the treatment of hypertension.

Blood Pressure Status	Before	After
Known HTN on Medication (36)	High B.P. 26(10,3%)	23(92%)become normotensive
	Normal B.P. 10(2.5%)	8(80%)stopped taking medication
Unknown HTN(23)	9,1%	18(78%)become normotensive
Normotensive (194)	76,7%	No change

DIAGNOSIS OF EXTERNAL ILIAC ENDOFIBROSIS

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External iliac endofibrosis (EIE) is a vascular injury that affects cyclist performance and training capacity with a difficult diagnosis. The aim of this study is to describe a new invasive method for EIE diagnosis.

METHODS

9 cyclists who suffered from EIE (IG) were compared to 21 top-level asymptomatic cyclists (CG). Humeral and tibial posterior pressures were evaluated and the ankle to arm index (AAI) was calculated, at rest and after maximal exercise. Wilcoxon test was used to compare pressures and AAI in the IG. Mann-Whitney test was used to compare the IG with the CG. Area under the AAI curve from 1st to 5th minute (A5) and from 1st to 10th (A10) was compared between groups. Significance level was set at $p<0.05$.

RESULTS

There was a significant difference between groups in the AAI response during the first five minutes ($p<0.01$) and from the 6th to 10th ($p<0.05$), in the actual study we obtained differences between groups in the A5 (CG: 4.97!0.69 and IG: 3.72!0.31) and in the A10 (10.36!1.28 y 7,69!1,86) after exercise. From these differences it is possible to diagnose vascular exercise insufficiency when A5 and A10 are under 3.1 and 8.1 respectively. Recently, Abraham et al. (2001), described a method to diagnose this injury by post-exercise pressures and ankle to arm index (AAI), proposing a cut-off level of 0.66 at first minute after exercise. Also, in this way Fernández-García et al. (accepted) proposed a discriminant analysis that takes into account pressures and AAI during ten minutes after exercise. We propose that area methods are safer than a single cut-off minute value, because they integrate 5 and 10 minutes responses.

CONCLUSIONS

The diagnosis of sport EIE is possible and safe by using methods measuring several responses in different minutes of the recovery, such as areas under the AAI curve, with cut-off values of 3.1 for 5 min and 8.1 for 10 min.

Key words: Ankle Arm Index, Exercise, Blood pressure, Doppler ultrasound, Cycling, Vascular surgery, Sport Injury.

TS-MEDISPORT ® SOFTWARE FOR SPORTS MEDICINE CLINICS

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Sports medicine as a medical speciality covers different kinds of activities oriented to health and performance, in both teams and sports medicine clinics.

Sports Medicine practise needs several tools for the different kind of evaluations (sports injuries diagnosis, functional evaluation, etc.) that generate a great amount of data, sometimes difficult to manage by the physician, this applies to recreational as well as high level athletes. For these reasons a specific software tool is needed to manage the data obtained from the various tests and sports medicine evaluations.

AIM

The aim of this project was to develop a specific software tool for recording and comparing the different sports medicine evaluations.

METHODS

First, the available software specifically oriented to sports medicine activities was evaluated. Second, the needs in the mainly sports medicine physicians activities were evaluated. And third, a fitted sports medicine software was developed.

RESULTS

As results of this study we will show the final version of the software. The program includes a filiation data form, sports background, medical background, injury records, laboratory, field test and force test forms, weight and blood control forms. The program allows individual and group data entry, and also allows comparing the individual's and group's evolution.

CONCLUSION

TS-MEDISPORT® software is a specific tool, in sports medicine, for physicians in both teams and sports medicine clinics.

Key words: computer systems, software design, sports medicine.

RACE PACE DURING OLYMPIC DISTANCE TRIATHLONS. DETAIL OF 1998-1999 AND 2000 SEASONS

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Olympic triathlon is a continuous effort composed by three different events, 1500m swimming, 40km bike, and 10km run, pooled by 2 transitions. Top level triathletes perform the competition in less than 2 hours, being bike event the longest (50% of the total race time), followed by run (30%), and swim (20%). Concerning the long duration of this competition, race pace could be relevant to achieve the run event in optimal conditions. The objective of this study was to analyze the race management adopted by triathletes, men and women, during olympic distance triathlons included in World Cup and ITU (International Triathlon Union) races carried out in 1998, 1999, and 2000 seasons.

About 50% of the races performed were evaluated (www.triathloncentral.com), involving the results reached on 1st, 3rd and 8th places. Individual results in each event (Re) were related in percentage to the best time in the event (BT). Then, performance of the triathlete (P) can be explained as: $P = (Re-BT)/BT*100$. Moreover, for the top 20, a Pearson correlation between the event and final results was made to evaluate the outstanding of each event in the final performance.

Results show a similar trend for each event over the 3 seasons analyzed. They could be graphically expressed as a ?V? profile. Differences, related to the best time, are important in swim and run events but non-existent for bike, having the biggest gap on the run event, between 4,8%-7,6%, and 5,6%-9,2%, in men and women, respectively. Besides, men races show a significant correlation between run event time and the total race time in 1998 ($r=0,782$; $p<0,001$) and 1999 ($r=0,975$; $p<0,001$). Women results show similar characteristics but swim and bike are also significant. Run (1999, $r=0,691$; $p<0,001$ and 1998, $r=0,618$; $p=0,004$), bike (1998, $r=0,744$; $p<0,001$) and swim (1998, $r=0,624$; $p=0,003$). On the other hand, men show higher competitive level than women. The differences between 1st and 8th places are of 2% in men while in women are of 3,5%. Finally, women races show a trend to improve the run event time during the last two seasons.

In conclusion, this study suggests that run event performance is the key for the final triathlon result. Management of physiological factors, as energetic stores, thermoregulation, hydration, mechanical efficiency?etc, during the swim and bike events could be necessary. This study provides a guideline for the improvement of: a) the training of the first transition to allow the rapid incorporation to the group which would reduce the energetic cost during the bike event, and b) the training of the run event due to its relevant role on the final performance.

Key words: triathlon, performance, race pace, training.

CLINICAL SIGNIFCANCE OF ELECTROCARDIOGRAPHIC PATTERNS IN ATHLETES

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BACKGROUND

Although several reports have describe a variety of ECG alterations in athletes, atributed to cardiac adaptations to systemic atheletic conditioning, there is still controversy of the clinical significance of these ECG patterns. Therefore Echocardiographic assesment of cardiac morphology are needed in some cases.

METHODS AND RESULTS

In order to study the value of ECG patterns in our athletic

population, we analyzed the last 500 ECG´s from our athlets medical check-ups. These athletes praticed any of the following sports: swimming, handball, football,hockey,judo,volley-ball,athletics.

All ECG-patterns were evaluated according to commonly adopted clinical criteria with the Pellicia modifications: normal or minor alterations(considered typical of athlete´s heart syndrome), mildly abnormal and distinctly abnormal.

Our results showed mainly minor alterations: (463 alterations) : 25% sinus bradicardia, 0,8% first degree A-V block, 50% right bundle branch block, 12,8% mild increase in R or S wave voltage (25to 29 mm), 3,6% early repolaritation.

Regarding distinctly abnormal alterations only 24 were found:0, 8% marked (< -30°)left QRS axis deviation, 0,6% marked (<110°) right axis deviation, 1,6% negative T waves, 1,2% strinking increased R or S wavw voltage (>35mm), 50% left atrium axis deviation. Long QT was seen in 6 cases and WPW in 3 cases.

CONCLUSIONS

Although most athletes in our group showed mormal or minor ECG alterations, some important abnormalities were also detected. Therefore a 12-lead ECG is a simple test to strengthen the diasgnostic efficacy of the medical history an physical examination to detect cardiac diseases in the athletes that could implay a high increas risk of morbidity or sudden death.

Further investigations (Echocardiography, Eco-stress, etc...)shoud be considered when finding distinctly abnormal ECG patterns.

Key words: Electrocardiographic, athletes, patterns.

ELECTROCARDIOGRAPHIC ALTERATIONS IN ATHLETES

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INTRODUCTION

There are several athlete's electrocardiographic variants that indicates the morphological and functional adaptation of the heart, induced by physical training. These adaptations characterizes the "athletic heart" and account for most of the normal variants in the athlete's electrocardiogram. Physical conditioning induces numerous cardiovascular adaptations, including lower resting heart rate and blood pressure, greater maximal stroke volume and cardiac output, and increased cardiac mass and volume. In this poster we discuss normal ECG alterations which result from changes in vagal tone and cardiac mass and volume as a result of physical conditioning.

SAMPLE

The present study was carried out in a total of 197 electrocardiograms of sports male persons who belonged to registered teams of the Oviedo´s University (athletes, basketball, handball, football, skiing, rugby...) all competition athletes and participants in national and international tournaments (range age 10-42 years old).

RESULTS AND DISCUSSION

We can saw differents electrocardiograms variants which have special parameters typical in sports athletes. The most common variant that we can saw was the sinus bradycardia (associated with a slow sinus rate is sinus arrhythmia which is the rhymic change in heart rate with respiration). In athletes with bradycardia is was usually to found high T waves voltages and U waves. We found that junctional escape beats are not uncommon in athletes with slow sinus rates. In the 10% of the cases we found AV blocks, result from the decreased conduction velocity though the AV node due to altered autonomic tone. High QRS voltage was found in the 11% of the cases but we think that their relation with left ventricular hipertrophy is low. In 13% of cases we saw a ST segment elevation –"early repolazation"-. Various intraventricular conduction delays have been reported in association with the athletic heart. Perhaps due to decreased conduction velocity from altered autonomic tone, increased muscle mass due to volume or pressure overload, or disruption of fascicles in the ventricular outflow tracts, an rSr´in V1 is not uncommon finding.

CONCLUSIONS

Adaptations in he athletic heart which result in vagotonia and induces increased cardiac mass and volume account for most of the normal variants in the athlete's ECG.

MEDICAL SCREENING OF COMPETITIVE ATHLETES

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PURPOSE

Physical check-ups amoung competitive athletes is a major responsibility of physicians specialized in sports medicine. In the past, particular attention was paid to possible orthopedic problems.

MATERIALS AND METHODS

We investigated 122 top athletes (73 players in the first German league and other top athletes) who had been considered healthy until then and underwent screening with particular attention to cardiovascular diseases. In addition to the measurement of laboratory parameters (lipid status, renal values, glucose metabolism), the athletes underwent ergospirometry and Doppler echocardiography.

RESULTS

In 16 cases, cardiovascular diseases requiring therapy were found (arterial hypertension n=4, mitral regurgitation I° n=2, aortic stenosis I° n=1, moderate arrhythmias n=2, atrial septum aneurysm n=1, impairment of renal function n=2, familial hypercholesterolemia n=4), which were unknown to the athletes until then. Subsequently, specific diagnosis and adequate therapy were started.

CONCLUSIONS

It may be concluded that before signing on top athletes, a medical evaluation is of major importance in addition to the orthopedic/traumatological examination. This provides a better safety for the athlete, a more precise assessment of the performance on part of the coach as well as a better care for the athletes on part of the club.

Key words: Physical check-up, top athletes, cardiovascular diseases, ergospirometry.

THE STUDY OF CARDIOVASCULAR PARAMETERS TO A LOT OF DEAF-MUTE FOOTBALL PLAYERS

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The authors have studied the cardiac performance to a lot of 18 junior football players with deaf-mutism. We have used non-invasive methods. We have appreciated the systolic time intervals on simultaneous recordings of phonocardiography, carotidian pulse and electrocardiography. These recordings were made on a polyinscriptor 6-NEK-4 (made in Germany). We have echocardiographically estimated the systolic volume and the cardiac output using an Ekoline-20. We analysed and statistically processed the data of our lot of deaf-mute sportsmen and compared to a control lot of 50 healthy non-sportive people and to a lot of 20 junior football players without handicap. We remarked an increase of 5% of the cardiac performance, that is an increase of 8% of the ejectional period of the left venticle, a decrease of 5% of the preejectional period and an increase of 7% of the cardiac output. In conclusion, the cardiac performance of deaf-mute football players was almost identically to that of football players without handicap. We noticed a favourable effect of the physical effort upon the cardiac performance, effect that is not limited by the hearing handicap. Key-words: football players, cardiovascular parameters, physical effort.

II CONGRESS OF THE EUROPEAN federation of sports medicine
IX CONGRESO NACIONAL de la federación española de medicina deportiva
I CONGRESO IBEROAMERICANO de medicina del deporte

THE VALUE OF THE SIX MINUTE WALK TEST IN THE EVALUATION OF THE EFFECTS OF EXERCISE TRAINING IN PATIENTS WITH CHRONIC HEART FAILURE

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Patients with chronic heart failure (CHF) are characterized by reduction of their work capacity. Therefore, easily obtained, universally available and inexpensive methods for the evaluation of their functional capacity are important in routine practice. The six minute walk test (6-MWT) is considered as a useful clinical tool for the evaluation of the exercise permormance in patients with low functional capacity. In order to investigate the significance and validity of the 6-MWT in the detection of the effects of an exercise training program on the aerobic capacity, 10 patients with CHF (NYHA class II and III), aged (61.1 ± 6.4) were studied. All patients followed an outpatient training program, consisted mostly of aerobic and progressive strengthening exercises, three times a week for 4 months. The patients underwent a six minute walk test with a telemetric spiroergometric study, as well as a symptom limited cardiopulmonary exercise test on a tredmill at the beginning and at the end of the 4-month training period. After 4 months training the VO2 6MWT, the VE 6MWT and the walked distance, were increased by 25% ($p<0.001$), 13% ($p<0.05$) and 13% ($p<0.001$) respectively, while the VE/VO2 6MWT ratio was by 15% ($p<0.001$) decreased. Similarly, the VO2 peak and VE peak, measured during the treadmill cardiopulmonary exercise test, were significantly increased by 26% ($p<0.001$) and 30% ($p<0.05$) respectively. Significant correlation was found between the walked distance, the VO2 peak ($r = 0.73$, $p<0.05$) and the VO2 6MWT ($r = 0.612$, $p<0.05$), at the beginning as well as at the end of the study ($r = 0.882$, $p<0.001$, $r = 0.862$, $p<0.001$ respectively). The VO2 6MWT was also found to be significantly correlated with the VO2 peak pre-training ($r = 0.653$, $p<0.05$) and post-training ($r = 0.789$, $p<0.05$). In conclusion, our data demonstrate that a 4-month exercise training program in CHF patients leads to a significant improvement of their cardiorespiratory capacity. The six-minute walk test was found to be a simple and reliable method for the evaluation of this improvement. Therefore, its use is recommended in cardiac rehabilitation programs.

FUNCTIONAL EFFECTS OF AN EXERCISE HEART FAILURE REHABILITATION PROGRAM

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Patients with chronic heart failure appear poor work capacity due to central and mainly peripheral disorders. The aim of this study was to assess the effects of exercise training on work capacity of these patients. Twenty-six male outpatients with chronic heart failure (stage " II NYHA), aged 53±9 years were studied. Sixteen of them (Group A) were selected at random for a 6-month exercise heart failure outpatient rehabilitation program (EHFRP) consisting of 3 weekly sessions of phase II and III exercise training. The other 10 patients (Group B) were assigned to sedentary control status. At the beginning and the end of the study all patients performed a modified Bruce treadmill exercise testing with spiroergometric study. The muscle strength of their lower limbs were also evaluated from measurements of the peak isokinetic knee extension and flexion at 120°/sec (% peak torque by a Cybex). After training significant improvements occurred in aerobic capacity of group A (VO2peak increased from 24.4±5.6 to 33.4±6.6 ml/kg/min, $p<0.05$), as well as in muscle strength. Specifically, peak torque of the flexors in group A increased significantly by 12% in left leg and by 10% in right leg and of the extensors by 9% and 11% respectively after 6 months training. All the above functional parameters remained almost unchanged in the controls at the end of the 6-month study. The results demonstrate that EHFRP is an effective therapeutic method for patients with heart failure improving their total functional capacity.

THE EFFECTS OF EXERCISE TRAINING DURING HEMODIALYSIS ON THE WORK CAPACITY OF THE PATIENTS

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Patients with end-stage renal disease on hemodialysis (HD) have impaired exercise capacity compared to the age-predicted normal values. Despite the helpful and beneficial effects of exercise training in these patients, compliance to regular supervised exercise on non-dialysis days remains poor. Exercise during HD sessions, seems to improve this compliance. However, there are few data regarding the effects of this type of exercise on the functional capacity of HD patients. The aim of this study was to determine the effects of a 6-month exercise training program during HD on cardiorespiratory capacity and muscle strength of the patients. Twenty-seven HD patients (aged 52±13 years) volunteered to participate in the study. Seventeen of them (12 males/ 5 females - group A) were randomly assigned to a 6-month supervised exercise training program. They were exercised 3 times per week during the first hour of their HD sessions with stationary bicycles (40-60 min). After the first three months strengthening exercise for the lower limbs and stretching exercises (15 min) were added after cycling. The remaining 10 HD patients (8 males/2 females) were used as controls (group B). All patients performed a modified Bruce treadmill exercise testing with spiroergometric study. The muscle strength of their lower limbs were also evaluated from measurements of the peak isokinetic knee extension and flexion at 180°/sec (by a Cybex II isokinetic dynamometer). After training the VO2max of group A increased from 17.3 ±4.8 to 20.4 ± 5.0 ml/kg/min ($p<0.05$), the exercise time from 14.5 ± 4.2 to 18.3 ± 4.1 min ($p<0.05$) and the METs from 8.2 ±2.0 to 9.9 ±2.1 ($p< 0.05$). The strength of their right and left legs increased by 15% and 15.8% respectively for the flexors muscles and by 11.2% and 12.8% respectively for the extensors. All the above functional parameters remained almost unchanged in the controls. There was no exercise-induced complication during the study. Our results demonstrate that exercise during HD is safe and effective, as improves the work capacity of end-stage renal disease patients.

T-WAVES ATYPICAL ASYMMETRY ATHLETES

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PURPOSE

To analyze peculiarities of T-wave contour due to overtraining in athletes.

MATERIALS AND METHODS

Surface 12-lead electrocardiography (ECG) was performed, in 55 elite male athletes aged 19-23 years with symptoms of overtraining in rest and after bi cyele stress-test. Besides common qualitative and quantitative ECG analysis was calculated the ratio of T-Wave upward and downward slopes duration (T1/T2). It was 1,56+0,02 in QRST complexes with normal T waves and 0,66+0,01 in cases with atypical ones (15 athletes). Number of athletes and ECG-leads with abnormal T1/T2 increased after stress-test (for 21% u 30% respectively) restoration and remained in 13% of athletes during recovery. Quantity of atypical T-waves increased with growth of left ventricular hypertrophy (LVH) obtained with ECG and EchoCG-methods.

RESULTS

Among common diversities of T-wave contour in athletes with overtraining due to extracardial reasons including emotional stress and metabolic changes, atypical asymmetrical T-waves obtained in rest and postexercise ECG rouse interest associated with LVH and chest pain appearance in athletes during competitions. In these circumstances in athletes with normal coronry arteries may occur endothelial dysfunction of microvessels with abnormal vascular responses.

CONCLUSION

The atypical asymmetrical T-waves reflect asynchronization in early and late repolarisation process. One of possible mechanisms responsible for these kind of changes may be microvascular dysfuncti on Further research should be carried out with large subject number to verificate these data.

Key words: T-wave, asynchronous repolarisation, microvascular dysfunction.

PREVALENCE URINARY INCONTINENCE IN SPORTSWOMEN VS SEDENTARY WOMEN

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OBJECTIVES

Comparation of prevalence of stress urinary incontinence (SUI) in sedentary vs sportswomen; and comparation of SUI in different kind of sports, years and hours per week of training in sportswomen.

MATERIAL AND METHODS

The sample was 161 nulliparous women between 14-35 years old: 105 federated sportswomen and 74 sedentary. They answered an anonymous questionnaire about their medical and sportive register. The statistics analysis were made with SPSS; the determination of statistical significance with Chi square and ANOVA ($p < 0.05$).

RESULTS

The prevalence of SUI (always of low severity) in sportswomen was 31.42% and in sedentary 2.85%, statistical significance (p=0.000). The prevalence of SUI was bigger with jumping (10.47%) and laughing (14.28%).

The incontinence was most common in the training sessions (66.66%) than in competitions (15.15%). The athletes with more than 10 years of sportive life increased the prevalence of SUI (20%) opposite to that with 3-10 years (11.42%) (p=0.006). The urine loss was most important in training among 6-12 hours (23.80%) than in training of more than 12 hours (7.61%) per week (p=0.018). The differences had statistical significance only comparing between basketball (50%) and swimming (0%) (p=0.003); and basketball and sedentary (2.85%) (p=0.000).

CONCLUSIONS

1) Bigger prevalence of SUI in women with regular, continous and intense sportive activity than in sedentary one. 2) Correlation with prevalence of SUI and number of years practising sports. 3) The number of hours of weekly training don’t increase the prevalence of SUI. 4) Bigger prevalence of SUI in training sesions than in competitions or matches. 5) Strong relationship between jump and SUI. 6) Bigger prevalence of SUI in basketball of all studied sports.

Key words: Stress urinary incontinence, sportswomen, prevalence.

EXERCISE-INDUCED COMA CAUSED BY SEVERE HYPONATREMIA

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OBJECTIVE

To describe an exercise-induced coma, in a sport event.

BACKGROUND

Sport-induced coma has been rarely described in the medical literature, and has been associated mainly to head injury. We report the first case of exercise-induced coma caused by secondary hiponatremia.

PATIENT'S DESCRIPTION

A healthy 25 year-old man participating in the Triathlon Iron Man of Lanzarote island, Spain, was admitted to the Emergency Room of our institution with a Glasgow Coma Scale score of 12 after suffering a sudden loss of consciousness followed by a tonic-clonic seizure, 200 meters before the Finish line. Computerized tomography of the brain was normal. Results from blood tests were normal except for a severe hyponatremia of 123 mmol/l. Tests for illicit drugs were not performed. With the diagnostic suspicion of coma secondary to hyponatremia (exercise-induced), hydro-electrolytic replacement associated with diuretic treatment was initiated, with the patient regaining full consciousness after 20 hours of therapy.

COMMENTS

Dehydration and serum electrolyte abnormalities are frecuent after exhausting sport events. Preventive strategies should be made aimed at avoiding these cases by ensuring adequate replacement of anticipated losses. Severe hyponatremia treatment will be discussed.

Key Words: Hyponatremia. Sport-induced coma. Iron Man.

EFFECT OF MENTAL TRAINING PROGRAM ON SHOOTING ACCURACY AND ELECTROENCEPHALOGRAPH FOR BASKETBALL AND WATER POLO PLAYERS

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INTRODUCTION

The high performance in physical activities wants high level in program training plans and it must include on psychological preparation. Especially in team games such as basketball and water polo. Where, players need to summons mental operations continuously.

Charles & Garfield (1995) indicated that mental training draw on improving performance and increasing knowledge of player's skill parts that fulfill it. The shooting affective factor in consequence matches. So, the trainer makes account and gives it momentousness in training dosages. Also, the researchers was measured the electroencephalogram (EEG) to record of activity in cortical neurons.

AIMS OF RESEARCH

Knowledge about effect of mental training program on shooting accuracy and electroencephalograph for basketball and water polo players.

METHODOLOGY USED

The researchers used the experimental methodology by using two groups selected by purposive sampling method from water polo and basketball players and they were 20 players and partition to two group (10 water polo and 10 basketball players).

MATERIALS

The researchers used the Electroencephalograph to measure the brain activity and analysis alpha, beta, delta, and theta waves. Also the researchers used muscle tension levels chart for Nideffer (1985), imagery chart in sports field for M. El Araby & M. Ismail (1996), Grid concentration test to measure attention concentration, and shooting accuracy test.

RESULTS

There're significant changes in shooting accuracy for basketball and water polo players. Also, there?re changes in electroencephalograph for both after mental training program and there?re significant changes in relaxation, imagery, and attention concentration after mental training program than pretest.

DISCUSSION

There're significant changes in all variables sequences the mental training program for 3 months affects on players ability, especially mental operations, which lead to develop of relaxation, imagery, and attention concentration. Then gain of shooting accuracy for water polo players and basketball players.

CONCLUSION

The mental training program leads to improve of mental abilities (relaxation, imagery, attention concentration) and enhances the brain waves for water polo players and basketball players.

Key Words: mental training, shooting Accuracy, and Electroencephelograph.

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INTRODUCING A SOFTWARE FOR REPORTS ON PHYSICAI ACTIVITY AND HEALTH

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PURPOSE

The «Unitat de Medicina de l'Esport-UME» (Sports Medicine Unit) of the Consorc Assistencial del Baix Emporda (CABE) has been operating since 1997. One of the goals of this Unit is the physical fitness evaluation of our amateur sportsmen in order to guarantee sports activity within safe limits.

The number of sportsmen we examine every year amounts to about 1,200, and a we are facing difficulties in giving them the medical report within a prudential period of time, we decided to create specific software.

MATERIAL AND METHODS

The Software Department of our company has achieved a good interpretation of ou neeUs designing a programme called «La Gavina-Medicina de l'Esport» fo Windows; we only need to fill in the predetermined fields and we automatically get the qualification after the calculations of the submaximel stress test results. All data can be exported and used in Excel.

This way the sportsman receives his report on physical activity and health, with the results of the exemination, the recommendations according to the findings and the qualification of his physical condition at the end of the medical examination.

CONCLUSIONS

We present a very helpful and teilor-made tool adjusted to the needs of importan amounts of medical evaluation on the basic sports level.

(On the poster you can see the three different screens of the programme as well as the final report).

Key Words: sofware, medical report, sports medicine.

SWIM-TEST, ECHOCARDIOGRAPHIC AND SPIROERGOMETRIC RESULTS IN TOP-LEVEL WATEPOLO PLAYERS

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Since 1983, Hungarian national waterpolo players' physical condition has been estimated by a swim-test, in which a summary index has been calculated from the time result of a 30 m sprint, from the avarage of a 6 x 30 m shuttle swim and from the 4 min heart rate recovery following the shuttle swim (Pavlik et al Hung Rev Sports Med 32 17 1991 and 42 129 2001).

PURPUSE

Comparison of the 2000 Olympic champion players' swim-test to their earlier results, comparison of their spiroergometric and echocardiographic results to those of other top-level athletes.

MATERIALS AND METHODS

All athletes were members of the Hungarian adult national teams. Echocardiography was made by 2D-guided M-mode and Doppler recordings (Dornier 4800, 2.5 MHz transducer), rel.aerobic power was measured in a treadmill (Jaeger 6000 LE) by a gas analyser (Jaeger-Dataspir).

RESULTS

Players displayed excellent summary swim-test results. The team avarage was the best among of all the measurements (33) since 1983. Rel. aerobic power of the waterpolo players was higher than that of power athletes but lower than that of endurance athletes. Among all of the examined athletic groups, cardiac hypertrophy was the most marked in the waterpolo players. The exponent corrected BSA-related left ventricular wall thickness (LVWT) and left ventricular muscle mass (LVMM) were more increased in waterpolo players than in the other athletes. Ratio of the early to late diastolic filling velocity (E/A) characterizing diastolic function in the waterpolo players was higher, heart rate was lower than the respective values in the other athletes.

	Waterpolo	Soccer	Hendurance	Power	Sprint/jump
N	13	13	63	33	22
VO_2max ml/kg	59,2±10,2	60,4±9,73	66,1±8,27	47,1±6,80	56,8±3,37
LVWT/BSA- mm/m	17,0±1,52	15,0±1,51	14,6±1,62	14,1±1,13	15,0±1,92
LVID/BSA – mm/m	37,9±2,06	37,0±2,51	38,5±2,34	36,0±2,01	36,0±2,07
LVMM/BSA $^{3/2}$ g/m^3	118,1±17,8	94,7±12,0	98,3±17,9	83,4±8,71	87,1±10,3
E/A	2,30±0,49	1,91±0,39	1,98±0,39	1,89±0,34	1,92±0,28
Herart rate b/m	55,2±7,28	60,4±9,73	59,1±10,6	63,1±11,5	64,2±7,80

MEAN± S.E.M					
	Waterpolo	Soccer	Hendurance	Power	Sprint/jump
N	13	13	63	33	22
VO_2max ml/kg	59,2±2,91	60,4±2,70	**66,1±1,04**	**47,1±1,18**	56,8±0,72
LVWT/BSA- mm/m	17,0±0,42	**15,0±0,42**	**14,6±0,20**	**14,1±0,20**	**15,0±0,41**
LVID/BSA – mm/m	37,9±0,57	37,0±0,82	38,5±0,29	**36,0±0,35**	**36,0±0,44**
LVMM/BSA $^{3/2}$ g/m^3	118,1±5,82	**94,7±3,92**	**98,3±2,25**	**83,4±1,52**	**87,1±2,20**
E/A	2,30±0,16	**1,91±0,13**	**1,98±0,05**	**1,89±0,06**	**1,92±0,06**
Herart rate b/m	55,2±2,38	60,4±3,18	59,1±1,64	63,1±2,00	64,2±1,66

CONCLUSION

Echocardiographic results suggest that waterpolo requires an extremely high level of endurance. Due to its inadequate character, treadmill-test seems to be inappropriate to characterize the players' condition. Instead of it, a swimming-test is recommended.

1. CÍM
2. Táblázat a vízilabda múltjáról - POWERPOINT
3. Szakirodalmában kiemelked_ alkotások
4. Különböz_ sportágak relatív aerob kapacitása
5. Edzettségi jelek
6. Relatív echo képletek
7. Rel.LVWT
8. Rel.LVID
9. Rel.LVMM
10. E/A quotiens
11. Pulzusszám
12. Úszóteszthez uszodai kép
13. Sporttesteres ábra
14. Képletek
15. Korreláció rel. aerob kapacitással
16. Esetleg életkorfüggés
17. Fejl_dés az évek folyamán

Key-words: waterpolo, swim-test, echocardiography, spiroergometry.