

INFLUENCE OF AEROBIC TRAINING ON HEART RATE VARIABILITY IN ADOLESCENTS

Igracki I., Mazic S., Malicevic S., Radovanovic D., Petrovic M., Nestic D.

School of
Medicine,
Institute of
Physiology.

Low Heart Rate Variability (HRV) has been reported to be an independent risk factor for development of coronary heart disease and has been identified as a risk factor for cardiac sudden death and all-cause mortality. The aim of this study was to assess the influence of aerobic training on automatic control of the heart rate (HR) using spectral analysis (time and frequency domain) of heart rate variability.

METHODS AND MATERIAL

Continuous ECG (recorded with Holter equipment), arterial blood pressure and respiratory parameters (recorded with Oxycon pro, Jaeger) were monitored in a 23 male subjects who practice aerobic training at least three times a week. They were all members of high school basketball team (age 17,1±0,5; body mass 80,9±2,6 kg; 191±0,5 cm). We have evaluated the same in 25 sedentary controls of the same age (age 17,3±0,5; body mass 72,6±7,4 kg; body height 181±0,5cm). All tests were performed between 9 and 11 AM, during 10 minutes and in seating position. The subjects were

requested to refrain from meals or caffeine and cigarettes for 12 hours before testing.

RESULTS

Time and frequency domain measures of vagal modulation of heart rate were higher in group of athletes vs. group of untrained subjects, while HR (64,7 vs. 79,3) and the low-to-high frequency ratio were lower, indicating an enhanced vagal modulation of heart rate in athletes compared to control group.

CONCLUSION

Because trained athletes have higher HRV in comparison to sedentary individuals, it has been suggested that exercise training can increase heart rate variability in normal population.

Increases in HRV might reflect improved cardiac autonomic modulation and prognosis.

Key words: heart rate variability, adolescents, exercise.

ECHOCARDIOGRAPHIC ASPECTS OF YOUNG ELITE FENCERS

Naghavi M.D.

Medical
committee -
Iran Fencing
Federation.

BACKGROUND

Modest increase in heart size (cardiac hypertrophy) represents a fundamental adjustment of healthy heart to exercise training.

1) ECCENTRIC HYPERTROPHY:

In Endurance training, internal ventricular dimensions increases.

2) CONCENTRIC HYPERTROPHY:

In resistance training, thickened Ventricular wall represents compensation of workload on LV.

There isn't any data about Cardiac characteristics of Fencers, thus this study was done as a starting point.

METHODS

25 members of Iran Junior & Cadet National Fencing team were compared with 25 nonathletes as control group.

Average age was 18,23 year (sd: 1,41) & 18 year (sd: 1,53) in Fencers and controls respectively.

Echocardiography was done in a heart hospital under supervision of Medical committee of Iran Fencing Federation.

T-student test was used for analyzing the data.

RESULTS

Significant statistical differences were found between Fencers & control group in:

-Interventricular Septal Thickness: (9,55 & 7,66 mm, p<0,05).

-Ejection Fraction: (%72 & %65, p<0,05).

-Left Atrial Diameter: (34,02 & 30,16 mm, p<0,05).

-Diastolic Blood Pressure (66,66 & 74,16 mmHg, p<0,05).

Other differences weren't found significant statistically.

CONCLUSION

The results show that in Fencers Interventricular Septum is thicker.

Than Controls (9,55 vs. 7,55).

There wasn't significant difference In Left Ventricular end diastolic & end systolic diameter.

The findings support the Idea that Fencing could be considered as a Resistance Training.

It's obvious that this study isn't enough for an exact deduction & Larger studies must be done.

Key Words: Fencing injuries, Sport Injuries, Echocardiography, Athlete's Heart, women fencing.

PRESCRIBING PERFORMANCE ENHANCING DRUGS; WHERE TO DRAW THE LINE

Cusi Mel F.

The use of performance enhancing drugs in sports competition remains unabated despite increasing attention to the topic and new anti-doping measures. Medical practitioners around the world are confronted by the therapeutic indications of drugs that are in contravention of doping regulations. Conversely, systematic abuse of performance enhancing drugs cannot be carried out without the knowledge or contribution of medical practitioners. The concept of doping and the IOC rationale for its anti-doping measures do not stand rigorous scrutiny. There is therefore a great deal of confusion about the rights and wrongs of drug prescription in the clinical practice of sports medicine. A working model is presented to assist the practising clinician to determine the ethical nature of drug prescription that may be in contravention of IOC anti-doping regulations. For any medical treatment to be ethical it must be clinically indicated, its alternatives not better or inadequate,

and its purpose therapeutic. The input of medical expertise is essential in the ongoing debate and decision making of all medical aspects of sporting regulations. The existing guidelines of the IOC Medical Code -including the list of prohibited substances-must be adhered to by those involved in the medical care of athletes and IOC sanctioned activities, unless there are circumstances that warrant departure from these norms for legitimate clinical reasons. The medical profession must at all costs maintain its position of independent expert but work in cooperation with the sporting authorities at both local, national and international level. The WMA set of ethical guidelines for physicians involved in athlete care must be adhered to as a sound base. Caving in to the pressures of drug prescription to enhance performance must be punished severely by the medical authorities, including suspension from involvement in team care or other official positions.

Orthosports.

HYPERTENSIVE RESPONSE TO EXERCISE IN A GROUP OF YOUNG MALE ATHLETES: RELATIONSHIP TO LEFT VENTRICULAR MASS

Mazic S., Arandjelovic A., Igracki I., Radovanovic D., Petrovic M., Malicevic S., Nesic D.

Left Ventricular (LV) mass is bigger in competitive athletes by 45% on average compared to appropriate control group. The increase in mass is due to growth in end-diastolic dimensions of the LV, LV wall thickness, or both. Diastolic function is preserved or even «supernormal» in athletes' heart in contrast to pathological LV hypertrophy, e.g. in hypertension, in which altered LV filling is early detected.

PURPOSE

To examine the prevalence of Hypertensive Response to Exercise (HRE) in a group of healthy young male athletes and to evaluate the relationship between blood pressure response to exercise and Left Ventricular Mass (LVM).

METHODS

LVM was evaluated by Doppler echocardiography in 21

healthy elite basketball players. Heart rate and blood pressure were measured at rest and during maximal cycle ergometry incremental test in the erect position (starting with 50W, increasing 50W each 3 minutes, until the theoretical maximal cardiac heart rate determined by 220-age formula), as well as in the recovery period. The age ranged from 19-25 (mean 21,3 years), Body Weight from 87 to 125,5 kg (mean 102,3 kg), Body Height from 192 to 211 cm (mean 203 cm). They have 24-28 training hours per week (depending on competition periods) and at least five competitive sport years.

RESULTS

HRE was observed in 4 of the 21 athletes (19,05%). In these 4 athletes the mean LVM index was $183,3 \pm 24,4$ g/m², whereas in athletes without HRE was $144,2 \pm 5,5$ g/m² (p less than 0,001). LVM index above 190 g/m² was observed in 2

School of
Medicine,
Institute of
Physiology,
Belgrade,
Yugoslavia.

athletes (50%) with HRE. In the group of young athletes, we did not find subjects with developed Left Ventricular Hypertrophy (LVH).

CONCLUSION

Our study shows that, despite similar training and exercise capacity, there are considerable differences in the LVM in top-level young basketball players. Bigger LVM was associated with higher systolic BP in exercise. According to

current general knowledge, subjects with HRE could be prone to develop hypertension, and non-physiological Left Ventricular Hypertrophy. Ergometry may be a useful test to prospectively identify individuals with increased risk for developing essential arterial hypertension. Early identification allows early prevention before developed hypertension becomes an important cardiovascular risk factor.

Keywords: Hypertensive response, Left Ventricular Mass, Adolescents, Exercise.

STRENUOUS INTERMITTENT HIGH INTENSITY EXERCISE AS A RISK FACTOR FOR CORONARY HEART DISEASE

Mingorance Cano Ignacio, Mesa Mesa José Luis, Ruiz Ruiz Jonatan, Gutiérrez Sáinz Ángel, González-Gross Marcela, Castillo Garzón Manuel J.

Departments
of Physiology
and Physical
Education,
University of
Granada,
Spain.

This year there is an estimated 7.0 million deaths by coronary heart disease (CHD). This atherothrombotic disease is caused by LDL and lipoprotein Lp(a) plasma levels, oxidation susceptibility of these lipoproteins and fluid shear stress on endothelial cells. Regular and moderate physical exercise is associated with favourable changes in atherothrombotic lipid profile, but data about the strenuous physical exercise at different metabolic rates are contradictory. We performed a cross-sectional analysis of 26 untrained young men and 68 elite sportsmen (23 footballers, 28 swimmers, and 17 volleyball-players), in whom baseline Lp(a), LDL, HDL, and apoB data were available. Data normally distributed were analysed with one-way ANOVA post hoc test, using Games-Howell or Tukey HSD tests for different or equal variances of the dependent variable for groups, respectively. Data non-normally distributed were analysed with Kruskal-Wallis test. Lp(a) values were analysed after logarithmic transformation. Between sportsmen, swimmers showed the lowest values in apoB (68.98 ± 36.02 mg-dl-1 vs 85.22 ± 23.49 and 87.12 ± 24.85 mg-dl-1 for footballers and volleyball-players, respectively; $P < 0.01$), in LDL (90.80 ± 16.36 mg-dl-1 vs 113.64 ± 31.42 and 126.16 ± 38.29 mg-dl-1, $P < 0.05$), and in (LDL + Lp(a))-HDL-

1 ratio (geometric means \pm geometric SD of 1.86 ± 1.37 vs 2.88 ± 1.49 and 3.02 ± 1.49 , $P < 0.01$). Accordingly, HDL was higher in swimmers (61.57 ± 10.79 mg-dl-1 vs 53.30 ± 7.76 and 50.00 ± 7.62 mg-dl-1, $P < 0.02$). Any difference in any dependent variable was observed between untrained men and swimmers, including Lp(a). In footballers, plasma Lp(a) was higher than untrained men (geometric means \pm geometric SD of 25.46 ± 3.62 vs 9.41 ± 2.87 mg-dl-1, $P < 0.02$), like (LDL + Lp(a))-HDL-1 ratio (geometric means \pm geometric SD of 2.88 ± 1.49 vs 1.94 ± 1.68 , $P < 0.01$). Tend of significance was found in LDL and HDL between volleyball-players and untrained men, towards atherogenic risk in the first. (LDL + Lp(a))-HDL-1 ratio was higher in volleyball-players than untrained men (geometric means \pm geometric SD of 3.02 ± 1.49 vs 1.94 ± 1.68 , $P < 0.01$). These results suggest that strenuous intermittent high intensity exercise (i.e.: football and volleyball) may be a risk factor for CHD, but not a strenuous aerobic physical exercise like swimming.

Key words: Lipoprotein(a) – Strenuous physical exercise – Coronary heart disease.

CAN THE ACCURACY IN HAEMATOCRIT TESTS FOR ELITE ATHLETES BE IMPROVED?

Corsi Dario*, Parisi Attilio**, Pigozzi Fabio**

*Inst. Biological
Chemistry "G.
Fornarini" Univ.
of Urbino 61029
Urbino Italy
**University
Institute of Motor
Sciences, Rome -
Italy.

INTRODUCTION

It was demonstrated that erythropoietin (rHuEpo) administered to healthy subjects increases haematocrit (number of red blood cells RBCs) and haemoglobin concentration, with a related increase in VO₂ max (1) and could represent a major threat in endurance competitions. Thus, it is considered a

doping substance by the International Olympic Committee. rHuEPO administration has been banned by the International Olympic Committee (I.O.C) and direct and indirect detection of rHuEPO in urine has recently been suggested (2-3-4) and validated by I.O.C. As the direct methods for detection of rHuEpo succeed in determining abuse of the substance only

if used about three days prior to the analysis, further steps and developments are needed to prevent rHuEPO abuse in sports. According to several International Federations, this has made pre-competition blood medical control programmes necessary, through which the haematocrit value (HCT) associated or not to other parameters is detected (haemoglobin, etc.). This control is considered to be a "health check" and positivity does not imply rHuEpo use by the athlete, but would result in a suspension from competition until the haematocrit level returns within the acceptable limits. The haematocrit test is important for preventing athletes with a high haematocrit value from heart diseases and arterial-venous thrombosis, because of the high viscosity of blood. Therefore, the 50% (47% female) haematocrit limit fixed by the control protocol, safeguards the athlete's health. Tests must be as accurate as possible, in order to avoid false positivity results or underestimation of the HCT value.

METHODS

The correct procedure for the HCT evaluation and the technical characteristics of different instruments were considered, such as: instrument's operating temperature, and its linearity, accuracy and precision for RBCs and MCV. Also blood samples were analysed by calibrating the instruments to different levels of haematocrit. In fact, the calibration procedure is also extremely important, since it might affect the subsequent blood sample analysis.

RESULTS

The existing analysis procedure for the evaluation of the haematocrit value demands the use of the Coulter AcT8 instrument. This is a handy instrument, but its technical characteristics do not guarantee the accuracy for the HCT evaluation. Accuracy, linearity ($\pm 5\%$), precision (CV $\pm 3\%$) and background ($\pm 1.6\%$) for RBCs values, given by the instrument, do not allow the determination of the existing value of the blood sample tested on the basis of a single reading, as proposed by the blood sample analysis procedure. Moreover, a single reading is statistically unacceptable. Even the instrument standards of control can be differently measured in a perfectly calibrated instrument with differences up to 2.5% HCT. Moreover in different instruments the same high

control standard is read with differences up to 2.5% HCT, as indicated by the manufacturer. It has been proven that limits of linearity, accuracy and precision affect the results obtained with the Coulter AcT 8 instrument.

DISCUSSION

The 50% HCT limit would hardly be read with precision if the Coulter AcT8 is used. Evaluation errors may be caused either by the calibration inaccuracy or by the instrument's lack of precision. It is also important to know how the samples and the standards are handled and to know the correction factors inserted in the instrument after calibration for each analysis. If their value is too high, then the blood sample reading might be seriously affected. The maximum error may reach 3.53 % of the hematocrit value. In order to obtain the real HCT value, the use of instruments with better linearity, precision and accuracy parameters than the Coulter AcT8 is necessary. It is also necessary to describe the blood sample test procedure in details and, for statistically valid results, to calculate the mean of several tests made on the same blood sample. Haemoglobin analysis is also susceptible to possible inaccuracies when using this instrument, in the same way that using of a haematocrit centrifuge (prescribed in the analysis procedure) does not allow very precise analysis of the haematocrit value. In conclusion, it is advisable that the blood test procedure be seriously considered, as it is aimed to safeguard the athlete's health and to evaluate whether or not he/she is fit for competitions.

Key Words: haematocrit test, evaluation accuracy, doping substance.

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RELATIONSHIP BETWEEN BODY COMPOSITION AND LEFT VENTRICULAR MORPHOLOGY IN COLLEGIATE ATHLETES PARTICIPATING IN DIFFERENT TYPE OF EXERCISE

Kinoshita Norimitsu, Onishi Shohei, Katsukawa Fuminori, Yamazaki Hajime

PURPOSE

Recent studies indicated that body composition strongly influenced left ventricular (LV) structure. Furthermore, in

athletes, it has been postulated that eccentric or concentric LV hypertrophy are dominantly developed by the dynamic or static exercise training, respectively. The purpose of the

Keio University,
Sports Medicine
Research Center.

study was to examine the effect of both body composition and the type of training on LV morphology in collegiate athletes.

MATERIALS AND METHODS

Echocardiography and hydrostatic weighing were performed in 63 endurance-trained athletes (E; 34 open water swimmers and 29 long distance runners), 58 strength-trained athletes (S; 31 karate players, 14 judo players, 8 wrestlers, 4 gymnasts, and 2 sumo wrestlers), and 54 combined endurance- and strength-trained athletes (C; 41 rowers and 13 cyclists). They all were healthy collegiate students (18-25 y/o) with normal blood pressure (<140/80 mmHg).

RESULTS

Fat free mass (FFM) was significantly ($p < 0.01$) correlated with LVM in E ($r = 0.44$), S ($r = 0.62$), and C ($r = 0.52$), whereas significant correlation of fat mass with LVM was observed only in E ($r = 0.35$). Stepwise regression analyses revealed that FFM was only an independent correlate of LVM all groups ($R^2 = 0.19, 0.39, \text{ and } 0.27$, respectively, $p < 0.001$). LV

mass relative to FFM was significantly larger in E and C than S ($p < 0.05$).

Relative wall thickness did not significantly differ among 3 groups. Neither FFM nor fat mass was correlated with relative wall thickness.

CONCLUSION

FFM was a strong predictor of LV mass whereas fat mass had little impact in collegiate athletes. Furthermore, LV mass increase relative to FFM seemed to be more enhanced by dynamic exercise training than static one. However, neither body composition nor the type of training had significant impact on the pattern of LV hypertrophy in collegiate level athletes.

This study was supported by Research Grants for Life Sciences and Medicine, Keio University Medical Science Fund.

Key words: body composition, left ventricular hypertrophy, exercise training.

PREVALENCE OF ASTHMA AND THE USE OF BRONCHODILATORS IN THE PROFESSIONAL ATHLETES IN SPAIN

Drobnic F,⁽¹⁾ Casan P.

Sports
Physiology Dept.
Centre d'Alt
Rendiment
(CAR), ⁽¹⁾ Unitat
Funció
Pulmonar H. Sta
Creu St Pau.
Barcelona.
Catalunya.
Spain.

The presence of asthmatic athletes at high competitive level is contradictory with the exercise as a trigger factor of asthma in the majority of patients. The prevalence of these individuals and the special cases are very useful in the learning process of the asthmatic, to know and accept their illness, and in the study of the physiopathologic process.

OBJETIVE

To determine the prevalence of asthma and the use of bronchodilators by the high level professional athletes.

METHOD

It was selected 104 clubs of the best national level of different sports (football, basketball, waterpolo, handball, rollerskating). A standard questionnaire was sent and a phone consultation was made in two occasions. During the same period of time the same questionnaire is passed to all the athletes of the Olympic Training Center.

RESULTS

The answering index is low (41%). We can only use football (F) (45% response) and basketball (B) (78%). The asthma prevalence is F 4% and B 6%, being the bronchodilator use of 2% for B and none for F. The prevalence of asthma in the national teams that passed through the CAR was 25% for swimming, 15% for voleibol, taekwondo (10%), track and field (5%), roller hockey (7%), wrestling (3%) and canoeing (0%). CAR mean (8%).

CONCLUSION

The study is limited by the low response, but we can observe a prevalence of asthmatics in the professional level of football and basketball similar to other groups of athletes of different sports and to the general population in Spain. There are small differences between type of sports, may be due to the ambient conditions of everyone of them. Asthma seems that is not a handicap to reach the professional level in sport.

Key words: Asthma, bronchodilators, doping, prevalence.

LONG ACTING B2 AGONIST TREATMENT AND ITS EFFECT ON PHYSICAL PERFORMANCE IN ELITE ATHLETES

Drobnic F,⁽¹⁾ Casan, Galilea P, Banquells M, Ruiz O,⁽²⁾ Ventura R,⁽²⁾ Segura J.

INTRODUCTION

Prevalence of athletes who suffer from asthma or elevated bronchial hyperreactivity is high nowadays in elite sport. The use of some topic B2-agonists is permitted under some circumstances and medical control. This control is mainly due to its collateral ergogenic and stimulant effect. Formoterol is a long B2 agonist for asthma treatment that has been permitted and finally will be permitted under certificate during the year 2001.

OBJECTIVE

Evaluate the effect of formoterol on different aspects of the physical performance in elite athletes.

MATERIAL & METHOD

A randomized, double blind, cross over study was designed. Twenty elite athletes, non asthmatics and no hyperreactive from different sports and specialities went through different tests to evaluate aspects of their physical condition fitness under treatment with formoterol (F) or placebo (P). One dosis of treatment (9 mcg), F or P, was taken early in the morning the day of the test and between 30' and one hour before the tests session. The tests were performed on two days. First day a maximal progresive effort test until exhaustion and a

Wingate test. Second day Isokinetic test at different speed and cicloergometer resistance test (one hour at 70% max. achieved the day before). Gas exchange parameters, lactate and pulse were obtained during the effort tests. Formoterol urine levels were quantified after the resistance test in all individuals in the P and F phase.

RESULTS

Both formulations were bioequivalent for the geometric mean of effort test (Wattios) measures at the 90% confidence interval. The F:P ratio was, in each case, within the acceptable range of 0.80-1.25. No clinical differences were observed between the use of F or P in any of the physiological parameters evaluated from the aerobic or anaerobic point of view, strength or power. Formoterol levels in urine for the F group was a mean (sd) of 4.8 (3.9) ng.

CONCLUSION

We can not observe any beneficial o negative effect on aerobic or aerobic performance manifestations by using Formoterol under terapeutical dosage.

Key words: Asthma, doping, B2-agonists, formoterol, ergogenics.

Sports
Physiology
Dept. Centre
d'Alt
Rendiment
(CAR),⁽¹⁾ Unitat
Funció
Pulmonar H.
Sta Creu i de
St Pau,⁽²⁾
Antidoping
Laboratory
IMIM-H. Del
Mar.
Barcelona.
Catalunya.
Spain.

THE INCIDENCE OF CORONARY, CAROTID AND PERIPHERAL ATHEROSCLEROSIS IN PHYSICALLY ACTIVE AND NON-ACTIVE ELDER INDIVIDUALS

Angelides N.S. M.D., Constandinou SRN Ph D., and Ch.

The aim of this study was to examine the effect of physical activity, on elder asymptomatic individuals in regards to the incidence of carotid coronary and peripheral atherosclerosis. For this purpose we studied at random two groups of elder individuals: -Group 1, included 100 individuals, 62 male, with no vascular or cardiac symptoms, who remained physically active. Their activities included regular every day walk or jogging, swimming, gardening or farming. Their mean age was 79+1,4. -Group 2, also included a 100 asymptomatic elder individuals, 69 male, with no regular physical activity the last 20 years. Their mean age was 78+1,8. The known risk factors for vascular disease, thus smoking, blood pressure, lipids, glucose, haematocrit, alcohol consumption and body mass index were carefully investigated. All individuals were

also examined by non-invasive methos for arterial disease which included: Triplex ultrasonography for the carotid arteries; ECG, 2-D Echo and exercise test for the coronary arteries; segmental pressures, pressure indices and spectrum analysis of femoral, popliteal and posterior tibial/dorsalis pedis tracings for the peripheral arteries. Smoking found to be significantly related to severe forms of carotid, coronary and peripheral asymptomatic vascular disease. There was also a significant correlation between asymptomatic vascular disease - especially of coronary artery disease - and hyperlipidymia. Abnormally elevated blood pressures, diabetes, increase alcohol consumption and obesity were also common characteristics of elder individuals of Group 2. The percentage with normal carotid arteries, normal coronary arteries and

Dept. of
Cardiovascular
Surgery,
Nicosia
General
Hospital,
Cyprus.

normal peripheral arteries for Group 1, was 56%, 47% and 82% respectively. On the contrary the relative percentage with normal arteries for Group 2 was significantly reduced. It was 30%, 22% and 49% respectively. Similarly, the percentage of individuals with severe carotid artery stenosis (greater than 70%), significant three-vessel coronary artery disease, or significant stenosis of the aortoiliac and femoropopliteal segment in Group 1 was 3%, 6% and 15%

respectively. This percentage was found significantly increased for individuals of Group 2. It was 12% 32% and 28% respectively.

Our results clearly indicated that the regular physical activity is an important factor for depressing the incidence of atherosclerosis in elder individuals and is therefore strongly recommended...

PATHOLOGICAL OR PHYSIOLOGICAL ELECTROCARDIOGRAPHIC FINDINGS OF REPOLARIZATION IN ENDURANCE TRAINED ATHLETES

*Pufulete Elisabeta, **C.Carp, **Ginghina Carmen.,**Deleanu D.

*National Institute of Sports Medicine, Bucharest ** Institute of cardiology * C.C.Iliescu*, Bucharest.

BACKGROUND

In the competitive endurance trained athletes, the resting electrocardiogram sometimes shows alterations of repolarization. Frequently this has been interpreted as a normal variant of a physiological "Athletic Heart Syndrome". We followed the athletes with ECG repolarization abnormalities to interpret the pathological or physiological significance.

METHODS

A group of 87 athletes from 6100 with repolarization abnormalities of ECG was detected between 1985 and 2000 (53 male and 14 female). We analysed that type of repolarization, the site of abnormality, the type of endurance training, duration, recurrence and sportive performance. The ECG test, ECO-2D examine has been made, in each athlete with ECG repolarization changes and only in 8 cases coronary angiography.

RESULTS

1. The majority athletes with abnormal repolarization had inverted T wave (in 62), and in 5 significant ST segment elevation. 2- The site abnormality was: a) anterior wall (V1-V6) in 30 athletes (26 male, 4 female). The ECG change has been inverted T. The type of sport was characterized by resistance in 11 and endurance and resistance in 19, b) The antero-septal site (V1-V3+/-V4) was observed in 19 (9 male, 10 female), 2 (resistance) and 7 (endurance and resistance); c) Postero-inferior site (DII, DIII, aVF) in 18 a endurance and resistance in 11 and resistance in 7; 3. ECG exercise test has

been realized in all subjects. In 83% the ECG became normalized during and immediately after effort. Previous ECG changes reappeared at 6 min. after effort cessation. 4. ECG become normal after decreasing or a pause in endurance training after 7-60 days, 5. The recurrence of repolarization abnormalities during enforced endurance sport activity occurred in 80% of athletes, in shorter interval young athletes. We observed in the recurrences an extension of the zone of abnormality in some cases. 6. A decrease of sport performance has been observed in majority of athletes with repolarization abnormality. Only two attended high level performance. ECO-2D showed in the cases with persistence inverted T wave some degree of eccentric or concentric, LV hypertony. Coronary angiography has been realized in a cases: normal in 8 cases: normal in 6; congenital coronary abnormality in one, and muscular bridge with a apical CMH in one case.

CONCLUSIONS

The abnormalities of repolarisation in the endurance trained athletes can be grouped three categories: 1. Reversible ECG changes, spontane or at ECG effort test, can be interpreted as a normal variant and it represent physiological athletic heart syndrome. 2. Cases with long persistence of ECG abnormalities with frequent and long; recurrences are considered pathological athletic heart syndrome. 3. Athletes with permanent repolarization abnormalities with eccentric or concentric LV hypertrophy can be considered as pathologically cardiomyopathy and the sportive activity is prohibited.

Key words: Athletic Heart Syndrome, LV Hypertrophy, Cardiomyopathy.

OBSERVATIONS OF STRUCTURAL CHARACTERISTICS OF THE ARTERIAL WALLS CONTACTED WITH BONE

Nesic Dejan, Mazic Sanja, Malicevic Sead, Velkovski Sasko, Petrovic Milos, Nikolic Svetomir ⁽¹⁾, Zivojinovic Dragana ⁽¹⁾, Mrvaljevic Milutin.

The wall structure of the arteries contacting the bone with one part of their wall where investigated by light microscopy. The numerous segments of vessels were taken from the following arteries: a.meningea media(from is intracranial part), a.ophtalmica(from is segment located in the optic canal),a.basilaris(while situated on the clivus),and from a.vertebrales(in the contact with the posterior arch of the atlas and in transversal canal). The specimens where taken from persons of both sexes and different ages on Institute of pathology. The blocks underwent the routine procedure for light microscopic examination and where stained with hematoxylin-eosin. The changes of the structural pan of the segment attached to the bone referred to the decreasing number of elastic fibers and smooth muscle cells. That was

combined with the increased number od collagenous fibers in the media of the arterial wall. The authros are convinced that the mentioned structual changes where caused by the functional adaptation of the wall to the mehanical ciculatory phenomena in the segments contacted with the bone. Having in mind such structure of the wall the impossibility of spontaneous hemostasis as well asthemore frequent apperance of the aneurismof the paraoesal arteries could be explained. In the fetus, the mentioned changes where not observed while the changes become more frequent with the age. They are likely to be consequence of the pressure of the arterial wall on the bone, partularly in the case of the changed arterial pressure.

Key words: Arterial walls, Architecture, Bone.

Institute of
Physiology
School of
Medicine
University Of
Belgrade,
Special
Hospital
Vrnjacka
Banja⁽¹⁾.

SPORTS PEDAGOGIC-HEALTH COUNSELLOR

Nesic Dejan, Mazic Sanja, Malicevic Sead, Velkovski Sasko, Petrovic Milos, Nikolic Svetomir ⁽¹⁾, Zivojinovic Dragana ⁽¹⁾, Janic Momir

The paper presence a theoretical discussion concerneng the general health and phisical education involved in common pedagogic process, and its contribution to the development of healthy body and sound and strong personality. The paper postulates that the health is primarily the function of an interrelation between man and his environment, of the already formed behavioral style, and of the struggle with numerous risk factors surrounding him. Since the health and his education are an inseparable entity of the development process of a young organism, far greater inportance should be attached to these areas within the primary health care. This was accomplished so far as health education is concerned but, however, the phisical education has not yet found its proper place. Therefore, there is much to be done to make the phisical education and spor, and thereby the sporting organisations, too, become the center of activities for health care and its promotion in the entire population, abd not only in those

organisations which strive to achive highest scors at any rate. In such attempts the sports pedagogic, through his work in the school, work, and sporting organisations, assumes great responsibility as part taker in the personality formation of the young people, which also means that hi, in addition to being trainer must also act as a link between these young people and there families, the school and wor organisation. This cannot be achived solely through direct contast with their trainers, but also by serving as and example to these young individuals who, through identification with their traineer should also exercise healthy patterns of behavior. Therefore, the sports pedagogic must be familiar not only with the principals of phisical education and sport activities but also with rationale of the pedagogic and health education program where a personal example plays and inportant role.

Key words: Sport Pedagogy, Climatology, Counselor.

Institute of
Physiology
School of
Medicine
University of
Belgrade,
Special
Hospital
Vrnjacka
Banja⁽¹⁾.

EXPERIMENTAL PROPOSAL TO ASSESS THE EFFECTIVENESS OF NSAIDS

Díaz Belén*; De Carlos Félix**; Costales Marina***; David****; Arguelles Juan****; Fernández-Mondragón María Pilar*****; Cobo Juan*****

Dental movement caused by orthodontic treatment is a consequence of a periodontal inflammatory process. Such movement takes place by osseous reabsorption in the compression side of the alveolar bone and dental apposition in the traction side. These transformations have the prostaglandins, amongst others, as mediators.

The objective of our work is to propose an experimental method to try and assess the anti-inflammatory potential of NSAIDS, starting from the inhibition degree of dental movement in the experimentation animal.

MATERIAL AND METHOD

We started from a murine experimental group of 30 individuals (Whistar mice) to which we applied a continuous orthodontic force of 50 gr. Nineteen of them also received treatment with

an NSAID (Rofecoxib®) and the rest (eleven) were taken as a control group.

RESULTS

In all the individuals of the control group we noticed some dental movement; however, in the group that was treated with Rofecoxib® the movement was inhibited.

DISCUSSION

There is no doubt about the inhibiting role of prostaglandins generated by NSAIDS. With this work we propose the possibility of partially assessing the efficiency of this anti-inflammatory, which can be expressed as its potential to inhibit orthodontic dental movement.

Palabras clave: AINES, prostaglandins, tooth movement.

TREATMENT WITH MANDIBULAR ADVANCEMENT APPLIANCES IN SPORTSMEN WITH AN INCREASE IN UPPER AIRWAYS RESISTANCE

De Carlos Félix*; De La Fuente José A***; Hernández Luis Carlos****; Díaz-Esnal Belén*****; Fernández-Mondragón María Pilar*****; Ojanguren María*****; Cobo Juan*****

Escuela de Estomatología.

The Upper Airways Resistance Syndrome (UARS) is considered to be an intermediate situation between Chronic Rhoncopathy (CR) and Obstructive Sleep Apnea Syndrome (OSAS). It is a pathology that reduces the patient's quality of life and has a negative effect on sportsmen's physical performance. One of the simplest and most effective treatments is the use of mandibular advancement appliances (MAD) during sleep.

The objective of our work is to assess, using lateral cranial teleradiography, the increase in the UAs by means of MADs.

MATERIAL AND METHOD

We selected a sample of 9 amateur sportsmen afflicted with UARS. They had a MAD made and were instructed to use it during sleep. The change in the UAs was assessed by cephalometric measurement in lateral cranial teleradiography without and with the MAD 30 days after its continuous use at night.

RESULTS

We found an increase in the UAs for all the parameters we studied, specially the UA caliber in the velopharynx.

DISCUSSION

The MADs are nowadays considered to be first choice therapy for the treatment of UARS by the American Society of Sleep Disorders. Their use must be taken into account in no-contact sports for sportsmen in whom a reduction of the UAs can be observed. This indication can be extended not only for their night use, but also when there are inflammatory pathologies of the UAs in which, due to other determining factors, we cannot use conventional medical treatments.

Palabras clave: Oral appliances, Upper airway resistance syndrome, mouth guards.

PREVALENCE OF TEMPORO-MANDIBULAR JOINT DYSFUNCTION IN SPANISH PROFESSIONAL SOCCER PLAYERS: ANALYSIS BY THE FINITE ELEMENTS METHOD

De La Fuente José A*; De Carlos Félix*; Hernández Luis Carlos***; Díaz-Esnal Belén****; Fernández-Mondragón María Pilar*****; Ojanguren María*****; Cobo Juan*****

Between 500,000 and 750,000 dento-maxillary injuries take place in the USA every year in the various sports. In the University of Tufts (Boston) the need has been recently expressed to carry out epidemiological studies in connection with injuries in the orofacial region in the various sports in order to provide adequate prevention.

Although this kind of injuries is usually related to fractures of nasal and malar bones, cigomatic and mandibular fractures and so on, few studies relate this kind of injuries to the secondary pathology of the Temporo-Mandibular Joint (TMJ).

The objective of our work is to assess the secondary pathology of the TMJ in a group of professional soccer players.

MATERIAL AND METHOD

We worked on 26 professional soccer players whose average age was 23.6 years (rank 19-33); and a control group of 26 amateur sportsmen (without contact) whose average age was 24.2 years (rank 20-33). We carried out the TMJ explorations

proposed by Alex Bumman in all of them. An assessment of the effect of the repeated injuries on the mandible was made using the Finite Elements Method.

RESULTS

A prevalence of nearly 35% of sign-symptomatology of TMJ dysfunction was observed in the target group, compared to the control group, in which this pathology is present in 9%.

DISCUSSION

Our study sets out a controversy in which, starting from the assumption that soccer is a sport in which legally there must be no contact in the maxillofacial region, repeated injuries in the mandible (including the whiplash syndrome when hitting the ball with the head) can create TMJ dysfunction, ranging from minor forms to severe arthropathies as in the case of goalkeepers.

Key words: Temporomandibular Joint disfunction, orofacial traumatism.

Escuela de Estomatología.

THE INFLUENCE OF PHYSICAL ACTIVITY ON HDL-2 CHOLESTEROL

Toba Yasumitsu ⁽¹⁾, Suzuki Kiyoyuki ⁽²⁾, Sakamoto Shizuo ⁽³⁾, Iijima Toshihiko ⁽³⁾

PURPOSE

The purpose of the present study is to examine the influence of the performing rate of Physical Activity (Activity of Aerobic Exercise) on HDL-2 Cholesterol that is supposed to have the suppressing effect to Arteriosclerosis.

SUBJECTS:

59 Male subjects of Averaged age 51.8Å} 10.9 years old who were examined Exercise Stress Test, and Fractional Examination of HDL-2 Cholesterol. Subjects had Obesity, Hyperlipidemia, Fatty Liver, Diabetes, and some of them were given Anti-Hyperlipidemic Medicine.

METHODS

The performance rate of Physical activity were classified into point as 0(Zero)point: 0day/week, 1point: 1 or less than 2days/week, 2points: 2days/week, 3points: 3 or 4days/week, 4points: more than 5days/week. It was investigated that the relationship between the movement of the performed physical activity that was classified as points and the changing value of HDL-2 Cholesterol.

RESULTS

The value of HDL-2 Cholesterol of 14case in 19case of increasing the rate of performance of Physical activity were increased, 7case which increased Physical activity starting from 0point also increased. In 41case which un-changed the rate of physical activity, HDL-2 Cholesterol value of 24case were increased. HDL-2 Cholesterol value of 11case were decreased, 1case was un-changed in 16case which decreased the rate of Physical activity.

It was not confirmed to have influence by Medicine like as Anti-Hyperlipidemic Medicine.

CONCLUSIONS

It suggested that the value of HDL-2 Cholesterol was strongly influenced by the movement of the performance of physical activity, and it was increased or decreased without influence of Medicine like as Anti-Hyperlipidemic Medicine.

Key ward: HDL-2 Cholesterol, Rate of Physical Activity, Aerobic Exercise.

1 - Japan Wrestling Federation: 1-1-1 Jin-Nan, Shibuya-Ku, Tokyo/ 2- Gunze Sangyo Inc.: 2-3-1 Kudan-Minami, Chiyoda-Ku Tokyo/3- Juntendo Univ. Urayasu Hospital: 2-1-1 Tomioka Urayasu, Chiba, Japan.