# CROATIAN INTERNATIONAL PUBLICATIONS

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**Smoljanovic T, Bojanic I, Hannafin JA, Urhausen A, Theisen D, Seil R, Lacoste A. Complete inclusion of adaptive rowing only 1000 m ahead. Br J Sports Med. 2013;47(13):819-25.**

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Adaptive rowing (AR) at the Paralympic level is accessible for rowers with physical disability. AR was included for the first time in the Beijing 2008 Paralympic Games. Racing distance for all AR events is currently 1000 m, which impedes public recognition of this sport and leads to many organizational challenges during the inclusive World Rowing Championships. The aim of this report was to discuss the feasibility of increasing AR race distance to 2000 m from a sports injury and athletic health perspective. As limited data on injury and illness risks exist in AR, knowledge and experiences had to be taken from other Paralympic sports. The anticipated duration of 2000 m AR competitions is either comparable or considerably lower than that of the other Paralympic disciplines with similar characteristics. AR has inherent injury and health risks especially within thorax, shoulders and low back region, but they are not expected to be significantly modified by increased racing times. Specific considerations need to be taken into account for athletes with a spinal cord injury, like in other sport disciplines. There are no distinctive contra-indications for AR events of 2000 m based on the current literature review and a 10-year experience in this sport. Long-term follow-ups are needed to understand fully the injury and health risk associated with AR and to develop appropriate prevention strategies.

**Judaš M, Sedmak G, Kostović I. The significance of the subplate for evolution and developmental plasticity of the human brain. Front Hum Neurosci. 2013;7:423.**

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The human life-history is characterized by long development and introduction of new developmental stages, such as childhood and adolescence. The developing brain had important role in these life-history changes because it is expensive tissue which uses up to 80% of resting metabolic rate (RMR) in the newborn and continues to use almost 50% of it during the first 5 postnatal years. Our hominid ancestors managed to lift-up metabolic constraints to increase in brain size by several interrelated ecological, behavioral and social adaptations, such as dietary change, invention of cooking, creation of family-bonded reproductive units, and life-history changes. This opened new vistas for the developing brain, because it became possible to metabolically support transient patterns of brain organization as well as developmental brain plasticity for much longer period and with much greater number of neurons and connectivity combinations in comparison to apes. This included the shaping of cortical connections through the interaction with infant's social environment, which probably enhanced typ-

ically human evolution of language, cognition and self-awareness. In this review, we propose that the transient subplate zone and its postnatal remnant (interstitial neurons of the gyral white matter) probably served as the main playground for evolution of these developmental shifts, and describe various features that makes human subplate uniquely positioned to have such a role in comparison with other primates.

**Tomić M, Kaštelan S, Metež Soldo K, Salopek-Rabatić J. Influence of BAK-Preserved Prostaglandin Analog Treatment on the Ocular Surface Health in Patients with Newly Diagnosed Primary Open-Angle Glaucoma. Biomed Res Int. 2013;2013:603782.**

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Purpose: Primary open-angle glaucoma (POAG), a chronic, degenerative optic neuropathy, requires persistent decrease of intraocular pressure so as to prevent visual impairment and blindness. However, long-term use of topical ocular medications may affect ocular surface health. Purpose of this study was to evaluate the influence of BAK-preserved prostaglandin analog treatment on the ocular surface health in patients with newly diagnosed POAG.

Methods: 40 newly diagnosed POAG patients were included in this prospective study. Intraocular pressure (IOP), tear break-up time (TBUT), and ocular surface disease index (OSDI) were assessed at baseline and 3-month after starting treatment with BAK-preserved travoprost 0.004%.

Results: IOP decreased in all patients from baseline to 3-month final visit (23.80 ± 1.73 mmHg versus 16.78 ± 1.27 mmHg; P < 0.001). Mean TBUT decreased from 11.70 ± 1.86 seconds at baseline to 8.30 ± 1.29 seconds at 3-month final visit (<0.001). Mean OSDI score increased from 31.63 ± 18.48 to 44.41 ± 16.48 (P < 0.001).

Conclusions: This study showed that BAK-preserved travoprost 0.004% is an effective medication in newly diagnosed POAG patients, but its long-term use may negatively influence ocular surface health by disrupting the tear film stability. Further studies are needed to better understand the clinical effects of different preservative types and concentrations on the ocular surface.

**Blaslov K, Bulum T, Zibar K, Duvnjak L. Relationship between Adiponectin Level, Insulin Sensitivity, and Metabolic Syndrome in Type 1 Diabetic Patients. Int J Endocrinol. 2013;2013:535906.**

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Objective: Adiponectin is known to be decreased in insulin resistance (IR) and metabolic syndrome (MS) which can be present in patients with type 1 diabetes mellitus (T1DM). The aim of this study was to evaluate the relationship between adiponectin level, MS, and insulin sensitivity in T1DM.

Research Design and Methods: The study included 77 T1DM patients divided into two groups based on the total plasma adiponectin median value. Insulin sensitivity was calculated with the equation for eGDR, and MS was defined according to International Diabetes Federation criteria.

Results: Patients with higher adiponectin level (n = 39) had significantly lower waist circumference (P < 0.002), fasting venous glucose levels (P < 0.001), higher HDL3-cholesterol (P = 0.011), and eGDR (P = 0.003) in comparison to the group with lower adiponectin who showed higher prevalence of MS (P = 0.045). eGDR increased for 1.09 mg/kg(-1) min(-1) by each increase of 1 μ g/mL total fasting plasma adiponectin (P = 0.003). In the logistic regression model, adiponectin was inversely associated with the presence of MS (P = 0.014).

Conclusion: Higher adiponectin concentration is associated with lower prevalence of MS in T1DM. Whether higher adiponectin concentration has a protective role in the development of the MS in T1DM needs to be clarified in future follow-up studies.

**Nestić M, Babić S, Pavlović DM, Sutlović D. Molecularly imprinted solid phase extraction for simultaneous determination of Δ(9)-tetrahydrocannabinol and its main metabolites by gas chromatography-mass spectrometry in urine samples. Forensic Sci Int. 2013;231(1-3):317-24**

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In presented paper analytical method based on solid-phase extraction using molecularly imprinted polymer and gas chromatography-mass spectrometry has been developed and validated for the confirmation of THC, THC-OH and THC-COOH in urine samples. Non-covalent molecularly imprinted polymers of THC-OH were prepared using different functional monomers (methacrylic acid, 4-vinylpyridine, and 2-hydroxyethyl methacrylate), ethylene glycol dimethacrylate as a cross-linker and 2,2'-azobis-isobutyronitrile as an initiator of radical polymerization. Analytes were extracted from urine samples using prepared polymer sorbent with highest binding selectivity and capability. Before extraction, urine samples were hydrolyzed with alkaline. Elution was performed with chloroform:ethyl acetate (60:40, v/v). Dry extracts were silylated with BSTFA+1% TMCS. Detection and quantification were performed using gas chromatography-mass spectrometry in single ion recording mode. The developed method was linear over the range from LOQ to 150ngmL(-1) for all three analytes. For THC, THC-OH and THC-COOH LOD was 2.5, 1 and 1ngmL(-1), and LOQ was 3, 2 and 2ngmL(-1), respectively. The precision, accuracy, recovery and matrix effect were investigated at 5, 25 and 50ngmL(-1). In the investigated concentration range recoveries were 71.9% for THC, 78.6% for THC-OH and 75.2% for THC-COOH. Matrix effect was not significant (<10%) for all analytes in the concentration range from 5ngmL(-1) to 50ngmL(-1). Extraction recovery on non-imprinted polymer was relatively high indicating high non-specific binding. Optimized and validated method was applied to 15 post-mortem urine samples.

**Bulum T, Blaslov K, Duvnjak L. Resting heart rate is associated with nonproliferative retinopathy in normoalbuminuric type 1 diabetic patients. J Clin Hypertens (Greenwich). 2013;15(8):579-83.**

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Previous studies have reported that retinopathy might be already present in the normoalbuminuric state in type 1 diabetic patients. The aim of this study was to evaluate the prevalence and predictors of nonproliferative retinopathy in normoalbuminuric type 1 diabetic patients. The study included 312 normoalbuminuric type 1 diabetic patients with normal renal function before any interventions with statins, angiotensin-converting enzyme inhibitors, or angiotensin II receptor blockers. Diagnosis of nonproliferative retinopathy was made by fundoscopy after pupillary dilatation. Urinary albumin excretion (UAE) rate was measured from at least two 24-hour urine samples. Nonproliferative retinopathy was present in 36% of normoalbuminuric patients. Patients with nonproliferative retinopathy were older and had longer duration of diabetes, higher hemoglobin A1c , daily insulin dose, and higher resting heart rate (RHR) (P≤.01 for all). Patients in the 4th quartile of RHR were older and had longer duration of diabetes, higher hemoglobin A1c , daily insulin dose, serum creatinine, UAE, and a significantly higher prevalence of nonproliferative retinopathy compared with subjects in the 2nd, 3rd, and 4th quartiles (P<.05). In logistic regression analysis, after adjustment for risk factors, higher RHR was significantly associated with risk of nonproliferative retinopathy in patients (P<.001), with odds ratios of 1.02 to 1.08. These data suggest that RHR is independently associated with nonproliferative retinopathy in normoalbuminuric type 1 diabetic patients.

**Ivezić-Lalić D, Bergman Marković B, Kranjčević K, Kern J, Vrdoljak D, Vučak J. Diversity of metabolic syndrome criteria in association with cardiovascular diseases - a family medicine-based investigation. Med Sci Monit. 2013;19:571-8.**

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Background: This study compared the association between the 3 definitions of metabolic syndrome (MetS) suggested by the World Health Organization (WHO), National Cholesterol Education Programme (NCEP ATP III), and International Diabetes Federation (IDF), and the risk of cardiovascular diseases (CVD) and shows the prevalence and characteristics of persons with MetS in continental vs. coastal regions and rural vs. urban residence in Croatia.

Material and Methods: A prospective multicenter study was conducted on 3245 participants ≥40 years, who visited general practices from May to July 2008 for any reason. This was a cross-sectional study of the Cardiovascular Risk and Intervention Study in Croatia-family medicine project (ISRCTN31857696).

Results: All analyzed MetS definitions showed an association with CVD, but the strongest was shown by NCEP ATP III; coronary disease OR 2.48 (95% CI 1.80-3.82), cerebrovascular disease OR 2.14 (1.19-3.86), and peripheral artery

disease OR 1.55 (1.04-2.32), especially for age and male sex. According to the NCEP ATP III (IDF), the prevalence was 38.7% (45.9%) [15.9% (18.6%) in men, and 22.7% (27.3%) in women, and 28.4% (33.9%) in the continental region, 10.2% (10.9%) in the coastal region, 26.2% (31.5%) in urban areas, and 12.4% (14.4%) in rural areas. Older age, male sex, and residence in the continental area were positively associated with MetS diagnosis according to NCEP ATP III, and current smoking and Mediterranean diet adherence have protective effects.

Conclusions: The NCEP ATP III definition seems to provide the strongest association with CVD and should therefore be preferred for use in this population.

**Civljak M, Stead LF, Hartmann-Boyce J, Sheikh A, Car J. Internet-based interventions for smoking cessation. Cochrane Database Syst Rev. 2013;7:CD007078.**

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BACKGROUND: The Internet is now an indispensable part of daily life for the majority of people in many parts of the world. It offers an additional means of effecting changes to behaviour such as smoking.

OBJECTIVES: To determine the effectiveness of Internet-based interventions for smoking cessation.

SEARCH METHODS: We searched the Cochrane Tobacco Addiction Group Specialized Register. There were no restrictions placed on language of publication or publication date. The most recent search was conducted in April 2013.

SELECTION CRITERIA: We included randomized and quasi-randomized trials. Participants were people who smoked, with no exclusions based on age, gender, ethnicity, language or health status. Any type of Internet intervention was eligible. The comparison condition could be a no-intervention control, a different Internet intervention, or a non-Internet intervention.

DATA COLLECTION AND ANALYSIS: Two authors independently assessed and extracted data. Methodological and study quality details were extracted using a standardized form. We extracted smoking cessation outcomes of six months follow-up or more, reporting short-term outcomes where longer-term outcomes were not available. We reported study effects as a risk ratio (RR) with a 95% confidence interval (CI). Clinical and statistical heterogeneity limited our ability to pool studies.

MAIN RESULTS: This updated review includes a total of 28 studies with over 45,000 participants. Some Internet programmes were intensive and included multiple outreach contacts with participants, whilst others relied on participants to initiate and maintain use.Fifteen trials compared an Internet intervention to a non-Internet-based smoking cessation intervention or to a no-intervention control. Ten of these recruited adults, one recruited young adult university students and two recruited adolescents. Seven of the trials in adults had follow-up at six months or longer and compared an Internet intervention to usual care or printed self help. In a post hoc subgroup analysis, pooled results from three trials that compared interactive and individually tailored interventions to usual care or written self help detected a statistically significant effect in favour of the intervention (RR 1.48, 95% CI 1.11 to 2.78). However all three trials were judged to be at high risk of bias in one domain and high statistical heterogeneity was detected ($I^2$ = 53%), with no obvious clinical explanation. Pooled results from two studies of an interactive, tailored intervention involving the Internet and automated phone contacts also detected a significant effect (RR 2.05, 95% CI 1.42 to 2.97, $I^2$ = 42%). Results from a sixth study comparing an interactive but non-tailored intervention to control did not detect a significant effect, nor did the seventh study, which compared a non-interactive, non-tailored intervention to control. Three trials comparing Internet interventions to face-to-face or phone counselling also did not detect evidence of an effect, nor did two trials evaluating Internet interventions as adjuncts to other behavioural interventions. A trial in college students increased point prevalence abstinence after 30 weeks but had no effect on sustained abstinence. Two small trials in adolescents did not detect an effect on cessation compared to control.Fourteen trials, all in adult populations, compared different Internet sites or programmes. Pooled estimates from three trials that compared tailored and/or interactive Internet programmes with non-tailored, non-interactive Internet programmes did not detect evidence of an effect (RR 1.12, 95% CI 0.95 to 1.32, $I^2$ = 0%). One trial detected evidence of a benefit from a tailored email compared to a non-tailored one, whereas a second trial comparing tailored messages to a non-tailored message did not detect evidence of an effect. Trials failed to detect a benefit of including a

mood management component (three trials), or an asynchronous bulletin board.

AUTHORS' CONCLUSIONS: Results suggest that some Internet-based interventions can assist smoking cessation at six months or longer, particularly those which are interactive and tailored to individuals. However, the trials that compared Internet interventions with usual care or self help did not show consistent effects and were at risk of bias. Further research is needed despite 28 studies on the subject. Future studies should carefully consider optimising the interventions which promise most effect such as tailoring and interactivity.