

Obesity Facts

The European Journal of Obesity

Vol. 7,
Supplement 1,
May 2014

21th European Congress on Obesity (ECO2014)

Sofia, Bulgaria, May 28–31, 2014

ABSTRACTS

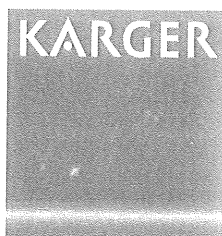


May 28–31 2014
Sofia, Bulgaria

EASO

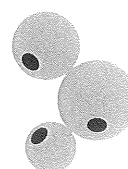
European Association for the Study of Obesity

S. Karger
Medical and Scientific Publishers
Basel · Freiburg · Paris · London ·
New York · Chennai · New Delhi ·
Bangkok · Beijing · Shanghai ·
Tokyo · Kuala Lumpur ·
Singapore · Sydney



EASO

EASO
European Association for the
Study of Obesity



DAG
Deutsche Adipositas-Gesellschaft



IFSO-EC
European Chapter of the
International Federation for the Surgery of
Obesity and Metabolic Disorders

T6:PO.048

Nutrition and metabolic disorders in patients with psoriasis

Ludmila Ivanova¹, Galina Zhelezova², Grisha Mateev³, Snejana Vassileva³, Pencheva⁴, Michailov⁴

¹Department of Neurology, Psychiatry and Rehabilitation, Preventive Medicine and Public Health Medical Faculty, Sofia University, "St. Kliment Ohridski", Bulgaria

²Department of Biology, Medical Genetics and Microbiology, Medical Faculty, Sofia University, "St. Kliment Ohridski"

³Department of Dermatology and Venerology, Medical University, Sofia

⁴Medical Diagnostic Laboratory, "Ramus", Sofia

Introduction: The epidemic of overweight and obesity is a serious public health problem, associated not only with a proven risk of cardiovascular disease but also with a contribution to other diseases that lead to disability and decreased quality of life. Psoriasis is one of these diseases, which are often accompanied by obesity and it is not clear if the two disorders share a common pathogenesis or obesity in patients with psoriasis is a result of some lifestyle factors as diet and physical activity.

Methods: To estimate the prevalence of obesity, metabolic disorders, diet and physical activity among individuals with psoriasis a cross-sectional study in the Department of Dermatology and Venereology, Medical University, Sofia was conducted. The study included 23 patients with diagnosed psoriasis and 25 healthy adults aged 21 to 80 years. Diet, alcohol consumption, smoking, physical activity, BMI, waist circumference, total – and HDL-cholesterol, triglycerides, fasting glucose and blood pressure were assessed.

Results: The prevalence of overweight among the psoriasis cases was 47.6% and 22.5% among the controls. Individuals with psoriasis reported lower physical activity and lower alcohol consumption compared to controls. No significant differences in diet and smoking habits between the two groups was identified. The most common feature in patients with overweight and psoriasis is abdominal obesity and hypertriglyceridemia which was not found in the control group.

Conclusion: The prevalence of overweight and dislipidemia is substantial among individuals with psoriasis in this study. Given the serious complications associated with the metabolic syndrome, this frequent comorbidity should be recognized and treated.

T6:PO.049

Consequences of overweight and obesity on human skeletal system

Ivan Struhár, Michal Kumstát

Faculty of Sport Studies, Department of Health Support, Masaryk University, Czech Republic

Introduction: Obesity is a serious worldwide problem. Metabolic consequences of obesity have been vastly studied, especially type 2 diabetes, heart disease and cancer. Less attention has been paid to postural changes, postural deviations and low back pain. A number of intervention programmes of reducing body weight have been created so far, however few of them might be considered as successful. The reasons are not fully understood. Body weight changes are responsible for various postural changes, which concurrently might reduce intervention programme adherence.

Methods: We want to emphasize some of the overweight and obesity postural disability consequences according to study of recent relevant literature. Understanding of these issues is important factor of prevention.

Results: Postural status of obese people is often impaired by alterations, such as protruding abdomen associated with the increase in lumbar lordosis. Furthermore, exaggerated thoracic kyphosis, leading to protrusion of the head and intervertebral disc herniation are of interest as well. Importantly, the risk of disc degeneration is substantially higher when BMI is above 25 kg/m². An excess of weight also negatively effects plantar arch of feet.

Conclusion: The prevalence of obesity is rising progressively. It is important to solve the problem of obesity as a part of the broad and complex

phenomenon. Therefore it is needed to integrate proper scientific disciplines especially from the field of physiotherapy.

T6:PO.050

Characteristics of metabolic disturbances in women with polycystic ovary syndrome (PCOS)

Maria Orbetzova¹, Gencho Genchev²

¹Clinic of Endocrinology, "Sv. Georgy" University Hospital, Medical University, Plovdiv; Bulgaria

²Department of Social Medicine and Health Management, "Tzaritza Joanna" University Hospital, Medical University, Sofia, Bulgaria

Introduction: PCOS is considered as typical representative of metabolic syndrome with insulin resistance and compensatory hyperinsulinaemia being the underlying mechanism. PCOS is associated with higher prevalence of visceral obesity, carbohydrate disturbances, dyslipidaemia and favorable ratio between atherogenic and antiatherogenic adipocytokine. The aim of our study was to characterize the metabolic disturbances in large cohort of Bulgarian PCOS women.

Methods: This retrospective study comprised of 345 women (mean age 25.9 ± 6.0 years, mean BMI 28.15 ± 7.5 kg/m²) with proven diagnosis according to the ESHRE-ASRM criteria. Anthropometric parameters, body fat distribution, glucose and insulin during an oral glucose tolerance test, lipid profile, adiponectin and leptin were investigated. The results were compared to those in age matched healthy women.

Results: Obesity was found in 51% and overweight in 27% of the PCOS women. Impaired glucose tolerance was found in 6.1% and diabetes mellitus in 2.3% of them. Basal insulin and HOMA index were significantly high and HDL-cholesterol significantly lower in PCOS women as compared to controls, obesity being an aggravating factor. Adiponectin was significantly lower while leptin was significantly higher in PCOS women as compared to the controls. Hypertension was found in 25% of the PCOS women.

Conclusion: Our data support the strong evidence that even in young age women

Friday, 30 May, 2014

TRACK 2 – Nutrition, Behaviour, Activity and Environment

T2 – Guided Posters

T2:PO.001

Comparison of two different incremental exercise tests for determination of aerobic fitness in severe obese men: effect of exercise duration

Davide Malatesta¹, Franco Codeca², Mauro Cornacchia², Sabrina Maestrini³, Paolo Capodaglio⁴, Amelia Brunani⁵, Alberto Salvadori², Stefano Lanzi¹

¹Institute of Sport Sciences of University of Lausanne (ISSUL), Department of Physiology, Faculty of Biology and Medicine, University of Lausanne

²Pulmonary rehabilitation department, Istituto Auxologico Italiano, Piancavallo, Italy

³Molecular biology laboratory, Istituto Auxologico Italiano, Piancavallo, Italy

⁴Orthopaedic Rehabilitation Unit and Clinical Lab for Gait and Posture Analysis, Istituto Auxologico Italiano, Piancavallo, Italy

⁵Medicine rehabilitation department, Istituto Auxologico Italiano, Piancavallo, Italy

Introduction: Higher aerobic fitness is associated with important health benefits in obese individuals and is usually assessed during a maximum

incremental test (T) of short duration (8–12 min, TS) (Buchfuhrer et al., 1983). In normal-weight individuals, it has been suggested that also longer T (~25–30 min, TL), with 5–6 min steps duration (typically used to assess fat oxidation and metabolic fitness in obese individuals), elicits valid maximal aerobic fitness values (Midgley et al. 2008). However, this has not been investigated in severe obese (SO) individuals. Therefore, this study aimed to compare the determination of aerobic fitness with TS and TL in SO men.

Methods: Eleven SO men (40.1 ± 4.0 yr; 41.9 ± 2.7 kg·m⁻²) performed on a cycle-ergometer a TS (40-W warm-up with 20-W·min⁻¹ increments) to assess the peak oxygen uptake ($\dot{V}O_{2peak,TS}$), maximal heart rate (HR_{max,TS}) and peak power output (PPOTS). Afterward, they performed a TL (20% PPOTS warm-up with 10% PPOTS·5min⁻¹ increments) to evaluate $\dot{V}O_{2peak,TL}$, HR_{max,TL} and PPOTL.

Results: TL was 2.6 significantly longer than TS ($P \leq 0.001$). There were no significant differences in $\dot{V}O_{2peak}$ (TS: 3.08 ± 0.34 l·min⁻¹; TL: 2.98 ± 0.46 l·min⁻¹; $P=0.31$) and HR_{max} (TS: 165.0 ± 14.4 bpm; TL: 164.8 ± 16.2 bpm; $P=0.95$) between the two tests. $\dot{V}O_{2peak,TS}$ was significantly correlated with $\dot{V}O_{2peak,TL}$ ($r = 0.75$; $P=0.008$) as well as HR_{max,TS} with HR_{max,LS} ($r = 0.94$; $P \leq 0.001$). PPOTS was significantly higher than PPOTL (+15%; $P \leq 0.001$). However, two PPOs were significantly correlated ($r = 0.91$; $P \leq 0.001$) attesting a systematic underestimation of PPO in TL.

Conclusion: TL is an appropriate tool to assess aerobic fitness and to prescribe exercise training in SO men.

T2:PO.002

Strength gains can be achieved through an active lifestyle promotion intervention in obese adolescents

Sandra Martins¹, Armando Raimundo², António Palmeira³, Helena Fonseca⁴

¹Centro de Estudos de Exercício e Saúde, Faculdade de Educação Física e Desporto, Universidade Lusófona, Lisboa, Portugal

²Research Centre of Sports, Health and Human Development, Évora University, Évora, Portugal

³Centro de Estudos de Exercício e Saúde, Faculdade de Educação Física e Desporto, Universidade Lusófona, Lisboa, Portugal; CIPER, FMH, University of Lisbon

⁴Paediatric Obesity Clinic, Paediatric Department, Hospital de Santa Maria, Lisboa, Portugal; Faculdade de Medicina de Lisboa, Universidade de Lisboa, Lisboa, Portugal

Introduction: In obesity, fat mass increase is associated with functional ability impairment and maximal strength reduction. The purpose of the present study was to analyze lower limb peak torque (PT) changes after a 6-month intervention aiming active lifestyle promotion in obese adolescents.

Methods: 21 adolescents (14.62 ± 1.24 yr; 32.50 ± 3.64 kg/m²), 16 girls, participated in this study. Baseline and 6-month data were collected assessing thigh PT (Biodex System 3 – Biodex Corp., Shirley, NY, USA), and body composition (dual-energy X-ray absorptiometry – Hologic-QDR Hologic, Inc., Bedford, MA, USA). Descriptive analysis was performed, along with normality test (Kolmogorov-Smirnov test), paired samples t-test, and Pearson correlation.

Results: An increase in PT was observed during knee extension at 60° ($\Delta=32.53$ Nm; $p=.001$) and 180° ($\Delta=16.13$ Nm; $p=.002$). No significant changes were found in knee flexion ($p > .05$). Significant associations were found, at baseline and at 6-month, between strength performance at 60° and lower body lean body mass ($r=-.692$; $p=.001$ and $r=-.791$; $p<.001$, respectively) and lower body percent fat mass ($r=-.807$; $p<.001$ and $r=-.652$; $p=.001$, respectively).

Conclusion: An intervention planned to promote an active lifestyle in obese adolescents was successful in the development of knee extension maximal strength, which can be elicited through walking and activities of daily living, thus increasing adolescent's functionality. The absence of improvement regarding knee flexion maximal strength might be explained by the need of specific exercise strategies to be achieved. Even among obese adolescents, strength performance presents a positive association with lean mass, as well as a negative association with fat mass.

T2:PO.003

Significant impact of eccentric endurance exercise on liver enzymes in overweight and obese individuals

Philipp Rein¹, Alexander Vonbank¹, Christoph Saely¹, Daniela Zanolin², Andreas Leihener², Heinz Drexel²

¹Department of Internal Medicine & Cardiology, Academic Teaching Hospital Feldkirch

²Vivit-Institute, Academic Teaching Hospital Feldkirch

Introduction: Elevated liver enzymes are highly prevalent in overweight and obese patients, reflect the presence of non-alcoholic fatty liver disease, and are associated with an increased risk of diabetes and cardiovascular events. Liver enzymes can be lowered by physical exercise, but many overweight patients are not willing or not able to engage in strenuous exercise regimens. Eccentric endurance exercise is less strenuous than concentric exercise but its effects on liver enzymes are unknown.

Methods: We allocated 42 overweight and obese sedentary individuals to an exercise intervention program, consisting of hiking downwards a pre-defined route over two months. For the opposite way, a cable car was used where compliance was recorded electronically. The difference in altitude was 540 metres; the distance was covered three to five times a week. A matched group of 12 individuals served as a control group. Metabolic profiles were obtained at baseline and after the two months period.

Results: Compared to baseline, 8 weeks of eccentric endurance exercise significantly lowered serum alanine-aminotransferase (ALT; 36 ± 23 vs. 31 ± 18 U/l; $p < 0.001$), the ALT/ aspartate-aminotransferase (AST)-ratio (1.22 ± 0.41 vs. 1.02 ± 0.33 ; $p < 0.001$), and serum gamma-glutamyl-transferase (56 ± 98 vs. 44 ± 65 U/l; $p = 0.005$), whereas these parameters did not change significantly in the control group ($p = 0.261$, $p = 0.272$, and $p = 0.644$, respectively). Eccentric endurance exercise was well tolerated and there were no serious adverse events.

Conclusion: Eccentric exercise is a promising new exercise modality which significantly lowers liver enzymes in overweight and obese individuals and therefore is of interest as a therapeutic intervention in non-alcoholic fatty liver disease patients.

T2:PO.004

Adipose tissue impairment as a central dysmetabolism inducing effect triggered by persistent organic pollutants

Pestana¹, Teixeira¹, Fernandes², Faria³, Sá¹, Faria⁴, Meireles¹, Norberto¹, Marques¹, Correia-Sá⁵, Guimarães⁶, Santos⁷, Taveira-Gomes³, Domingues⁵, Delerue-Matos⁵, Monteiro¹, Calhau⁸

¹Department of Biochemistry, Faculty of Medicine, University of Porto, Portugal

²Chemistry Investigation Centre (CIQ), Faculty of Sciences, University of Porto, Portugal and REQUIMTE – Instituto Superior de Engenharia, Instituto Politécnico do Porto, Portugal

³General Surgery Department, S. João Hospital, Faculty of Medicine, University of Porto, Portugal

⁴Department of Biochemistry, Faculty of Medicine, University of Porto, Portugal; and Chemistry Investigation Centre (CIQ), Faculty of Sciences, University of Porto, Portugal; and Faculty of Nutrition and Food Sciences, University of Porto, Portugal

⁵REQUIMTE – Instituto Superior de Engenharia, Instituto Politécnico do Porto, Portugal

⁶Department of Biochemistry, Faculty of Medicine, University of Porto, Portugal; and Department of Clinical Pathology, Hospital S. João, Porto, Portugal

⁷Department of Hygiene and Epidemiology, Faculty of Medicine and Institute of Public Health, University of Porto, Porto, Portugal

⁸Department of Biochemistry, Faculty of Medicine, University of Porto, Portugal; and CINTESIS – Center for Research in Health Technologies and Information Systems, Porto, Portugal

Introduction: The role of environmental toxicants with endocrine disrupting activity in the aetiology of obesity and its comorbidities has been recently highlighted. As the persistent organic pollutants (POPs) are ac-

accumulated in adipose tissue (AT), we focused our attention on its contribution to metabolic dysfunction, resorting to a complementary human/rodent approach.

Methods: We assessed the prevalence of 13 POPs in AT samples from obese Portuguese subjects that underwent bariatric surgery ($n = 189$), associating with the presence of metabolic dysfunction. To further understand their putative mechanisms, we investigated the effects of chronic *in vivo* exposure to *p,p'*-DDE (100 $\mu\text{g/kg/day}$) in a rat model of diet-induced obesity.

Results: In addition to the confirmation of POPs ubiquity in these human samples, we observed a dissimilar POPs storage capability in two distinct AT depots (vAT and scAT). Moreover, we revealed a positive correlation between POP levels and metabolic dysfunction in a context of obesity, with vAT contribution to metabolic dysfunction appearing to be more relevant.

Furthermore, our animal study shown that DDE exposure worsened the metabolic impact of high-fat exposure, along with an impairment of the mesenteric vAT dynamic capability and expansion function, characterised by transcription decrease of nervous system and tissue development-related genes, with special relevance for the neuropeptide galanin that also revealed changes in epigenetic regulation.

Conclusion: This highlighted that POPs stored in AT might be critical in metabolic dysfunction development in a context of obesity, supporting their broader recognition as “environmental dysmetabolism inducers”, in which the impairment of AT normal function seems to play an important role.

T2:PO.005

Deprivation by diet alone or by aerobic exercise alone: how modality of an acute intervention can differently impact ‘wanting’ and ‘liking’ of preferred foods

Jameason Cameron¹, Gary Goldfield¹, Eric Doucet²

¹CHEO

²University of Ottawa

Introduction: The relative reinforcing value (RRV) of food is assessed by the comparative reinforcing efficacy of two stimuli. Acute food deprivation increases the RRV value of preferred snack foods, but the impact of modality of deprivation on food reinforcement (‘wanting’) and hedonics (‘liking’) has to our knowledge not been evaluated.

Methods: Ten male subjects aged 23.7 ± 5.1 yrs. with initial body weight 83.2 ± 11.5 kg were included in this repeated-measures cross-over design. After randomization subjects performed 2 acute -25% daily needs energy deficits induced by diet only (DER) or by exercise only (DEX). The repeated measures were CON4, DER4, and DEX4, where body composition (DXA), ‘wanting’ (RRV: computer task), and ‘liking’ (palatability: visual analogue scale) of preferred foods was measured.

Results: Relative to CON4 there was a significant increase in snack points earned (versus fruit) in the DER4 (15.5 ± 4.3 vs. 24.7 ± 6.5) and DEX4 (15.5 ± 4.3 vs. 35.6 ± 4.8) sessions; a significant interaction showed higher mean snack points in the DEX4 session. Also relative to CON4, there was a significant increase in mean palatability rating of the snack reinforcers under DER (139.2 ± 13.5) and DEX (133.4 ± 19.6). All results presented are significant at $p < 0.05$.

Conclusion: ~We show ‘wanting’ and ‘liking’ of a palatable snack reinforcer increase together in a similar direction independent of deprivation modality. Obesity interventions targeting 25% energy restriction by either diet or exercise need to consider both forms of energy deprivation acutely increase the rewarding value of food, which may undermine or explain poor long-term maintenance of weight loss outcome.

T2:PO.006

Parental Feeding Practices as Mediators between Maternal Nutritional Knowledge and Children’s Fruit and Vegetable Intake

Dimitrios Koutoukidis¹, Lucy Cooke²

¹Department of Women’s Cancer, UCL Institute for Women’s Health and NIHR University College London Hospitals Biomedical Research Centre, London, UK

²Health Behaviour Research Centre, Department of Epidemiology and Public Health, University College London, UK

Introduction: Fruit and vegetable (FV) consumption may reduce mortality risk but UK children’s intake is below recommendations. Identification of determinants of children’s FV intake may inform strategies to facilitate its increase.

Methods: This cross-sectional study, conducted in 60 preschools and children’s centres in London in 2008, investigated the associations between parental nutritional knowledge, parental feeding practices and children’s FV intake. 434 primary caregivers of 2–5 year-old children completed a self-report questionnaire. Parental Nutritional Knowledge was assessed with the Nutritional Knowledge Questionnaire. Parental feeding practices included monitoring, encouragement, instrumental feeding, pressure to eat, modelling, covert control and restriction and were assessed using validated questionnaires. Parental and children’s FV intake were estimated as portions/day. The possible mediating effect of parental intake and feeding practices in the association between parental nutritional knowledge and children’s FV intake was assessed via product-of-coefficients tests in single and multiple mediation models controlling for parental education, ethnicity and children’s age and sex.

Results: The positive association between maternal nutritional knowledge and children’s FV intake (total $\beta = 0.03$, CI: 0.02, 0.04) was fully mediated by a combination of parental FV intake ($\beta = 0.0184$, CI: 0.0126, 0.0271) and encouragement ($\beta = 0.0031$ CI: 0.0008, 0.0077), pressure to eat ($\beta = 0.0048$ CI: 0.0019, 0.0101) and restriction ($\beta = 0.0022$ CI: 0.0005, 0.0060).

Conclusion: Maternal nutritional knowledge promoted children’s FV intake mainly through maternal FV intake and through increased encouragement and restriction and decreased pressure to eat. Findings support these as targets in interventions.

Conflict of interest: None declared

Funding: Cancer Research UK (C1418/A7974) and State Scholarship Foundation (2012-IIIE1–679)

T2:PO.007

Proximate composition and fatty acid profile of three commercially important fish species from Bulgaria

Albena Merdzhanova, Mona Stancheva, Lubomir Makedonski

Department of Chemistry Faculty of Pharmacy Medical University of Varna

Introduction: The aim of the present study was to determine the proximate composition and fatty acid profile in two freshwater fish from carp family – common carp (*Cyprinus carpio*) and bighead carp (*Aristichthys nobilis*) and one Black Sea fish species – horse mackerel (*Trachurus mediterraneus ponticus*) traditionally consumed in Bulgaria.

Methods: Proximate composition was determined according to standard procedures: moisture, crude protein (Kjeldahl method), total lipids (Bligh and Dyer method, 1959). Analysis of fatty acid methyl esters was performed by Gas Chromatography – Mass Spectrometry.

Results: Crude protein was in the range 15.24–19.55%, fat content was from 3.80 to 12.76 g/100g-1w.w. Energy values were in interval 440–750 kJ/100g-1 w.w. The fatty acid (FA) contents of the investigated fish species showed significant differences. The freshwater species were characterized with lower saturated FAs in range from 35.95% (carp) to 37.53% (bighead carp). Carp presented highest monounsaturated FAs (49.41%) and lowest polyunsaturated FAs (PUFA) (14.55%), including omega-3