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EDITORIAL

Kinesiology is considered a young integrative science and scientific research discipline with an anthropological, systems and cybernetics approach that represents a specific integration of natural and social sciences within its area of study. Due to the nature of man as a part of an evolutionary system, the nature of physical/sport activities and the characteristics of the environment, the kinesiology area of study, are so varied and complex that they cannot be treated and explained by any one science independently without the participation and integration of other related disciplines. However, kinesiology should not be understood as mere science, which is the sum of the knowledge of certain scientific disciplines. With its approaches, tools, content and methods, it represents instead a new, higher quality of treatment towards the subject of study.

Both the dimension of kinesiology's core tools and content and the influence of physical/sport activities on certain areas of man's life and work as individuals and as parts of modern society, are the focus of kinesiology aiming to contribute to the analysis of the situation as a step towards quality improvements. Physical/sport activities were, throughout the evolution of man and the formation of his functional capabilities, much more present in the past than today, but that does not diminish their impact that is, even today, frequently considered to be of crucial importance to one's health and efficient physical operation.

Both in the ontogenesis and phylogenesis of man as well as in the incidence of his fundamental tasks, the role and importance of physical/sport activities can be presented through the seven areas that define a human, completing him and placing him into both the life and space of contemporary society.

The "kinesiology heptagram" model or seven-sided star (heptagram also as a Byzantine symbol of synthesis and integration) defines its value and role in the following areas:

– development and autonomy of man through all stages of life (*developmental kinesiology*),
– communication and expressiveness of movement as a universal language (*expressive kinesiology*),
– support for health – prevention, cure and rehabilitation (*kinesiology of balance*)
– education and learning about the world – physical learning (*cognitive kinesiology*)
– work (*ergo-kinesiology*),
– relaxation and compensation (*kinesiology of free time*) and
– sport (*kinesiology of maximum*).

The motivation and goal behind the proposed model of the study areas as well as the impact of kinesiology is to apply this young science as extensively as possible to every pore of contemporary society. As for the experts in this field, we are required to bear the burden of responsibility due to the science's state of passivity as well as its deviation from the laws of nature and biological needs alike.

Professor Rado Pišot, Ph.D.,
Editor-in-Chief

PREDGOVOR

Kineziologija velja za mlado integrativno znanost in znanstvenoraziskovalno disciplino, ki s svojim antropološkim, sistemskim in kibernetskim pristopom znotraj svojega področja obravnave predstavlja specifično integracijo več naravoslovnih in družboslovnih znanosti. Področje obravnave kineziologije je zaradi same narave človeka kot dela evolucijskega sistema, narave gibalne/športne aktivnosti ter značilnosti okolja tako raznovrstno in zapleteno, da ju ne more povsem obvladovati in pojasnjevati nobena znanost samostojno, brez sodelovanja in povezovanja z drugimi sorodnimi disciplinami. A kineziologije ne gre razumeti kot znanost, ki je le vsota spoznanj določenih znanstvenih disciplin. S svojimi pristopi, orodji, vsebinami in metodami predstavlja novo, višjo kakovost obravnave predmeta svojega preučevanja.

Na področja življenja in dela človeka kot posameznika in kot dela sodobne družbe, ki jih obravnava kineziologija in na katerih skuša prispevati tako k analizi stanja kot v smeri izboljšanja kakovosti, vpliva razsežnost njenega temeljnega orodja in vsebine – gibalne/športne aktivnosti Ta je bila sicer v evoluciji človeka in oblikovanju njegovih funkcionalnih zmožnosti veliko bolj prisotna v preteklosti kot danes, kar pa ne zmanjšuje njenega, za zdravje in učinkovito delovanje velikokrat odločujočega vpliva tudi danes.

Tako v filogenezi kot ontogenezi človeka kot tudi v pojavnosti njegovih temeljnih opravil se vloga in pomen gibalne/športne aktivnosti lahko predstavi skozi sedem področij, ki človeka oblikujejo, ga izpolnjujejo in umeščajo v življenje in prostor sodobne družbe.

Model sedemkrake zvezde oziroma »*septagram kineziologije*« (septagram sicer tudi kot bizantinski simbol sinteze in integracije) opredeljuje njeno vrednost in vlogo na področjih:

– razvoja in samostojnosti človeka skozi vsa njegova življenjska obdobja (*razvojna kineziologija*),
– komunikacije in izraznosti gibanja kot univerzalnega jezika (*izrazna kineziologija*),
– podpore zdravju – preventiva, kurativa in rehabilitacija (*kineziologija ravnovesja*),
– edukacije in spoznavanja sveta – gibalno učenje (*spoznavna kineziologija*),
– dela (*ergo-kineziologija*);
– sprostitve in kompenzacije (*kineziologija razbremenitve in prostega časa*) ter
– športa (*kineziologija maksimuma*).

Želja in cilj ponujenega modela področij obravnave ter vpliva kineziologije je umestiti to mlado znanost kar najširše v pore sodobne družbe. Njena pasivnost in odmik od naravnih zakonov in bioloških potreb nam, strokovnjakom področja, to odgovornost nalaga.

Prof. dr. Rado Pišot,
glavni in odgovorni urednik

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THE ROLE OF PHYSICAL ACTIVITY AND DIETARY HABITS IN PREVENTING OBESITY IN ADULTHOOD

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ABSTRACT

Purpose: The paper discusses the evidence linking physical inactivity and dietary habits with obesity. The hypothesis is that low levels of physical activity and sedentary lifestyles favour a positive energy balance, therefore leading to obesity, low grade inflammation and weight gain.

Methods: A total of 96 individuals aged 25-49 years were interviewed by questionnaires for physical activity and eating habits. Based on body mass index (BMI) as well as their percentage of fat mass and waist circumference, the participants were divided into either an overweight or normal weight group. Anthropometric parameters, the biochemical variable C-reactive protein and life style factors were compared between the groups using both Student's t-test and the Pearson´s correlation test (r) to identify the correlation between BMI and lifestyle factors.

Results: When the BMI was examined in correlation with various lifestyle factors, a statistically significant difference regarding physical activity and physical fitness was found between the studied groups. In the case of dietary habits, a significantly lower number of consumed meals per day and a higher number of consumed units of meat and meat products were found in the overweight group. Furthermore, a statistical positive correlation was found between the number of meat and meat products consumed and general dissatisfaction with both weight and BMI. In contrast, a negative correlation was discovered between BMI and physical activity as well as physical fitness and the numbers of meal per day.

Conclusion: The increasing prevalence of physical inactivity seems to be an imperative explanation for increasing obesity and obesity related disorders.

Key words: *physical activity, BMI, dietary habits, obesity, inflammation*

VLOGA GIBALNE AKTIVNOSTI IN PREHRANJEVALNIH NAVAD PRI PREPREČEVANJU POJAVA DEBELOSTI PRI ODRASLIH

IZVLEČEK

Članek opisuje povezave med gibalno/športno neaktivnostjo in prehranskimi navadami s pojavom debelosti. Naša hipoteza je, da se gibalno/športna neaktivnost povezuje s pozitivno energijsko bilanco, nizko stopnjo vnetja in dvigom telesne mase.

Metode: 96 posameznikov, starih 25–49 let, je izpolnilo vprašalnike o prehranjevalnih navadah in gibalno/športni aktivnosti. Na podlagi ITM-ja, odstotka maščobne mase in obsega pasu so bili udeleženci razdeljeni na preiskovalno in kontrolno skupino. Antropometrične spremenljivke, biokemijsko spremenljivko CRP in dejavnike življenjskega sloga smo primerjali med dvema skupinama.

Rezultati so pokazali statistično pomembne razlike v telesni aktivnosti in fitnes indeksu med skupinama. Glede na prehranjevalne navade smo med preiskovanci opazili statistično nižje število zaužitih obrokov na dan in statistično višje število dnevnih zaužitih enot mesa in mesnih izdelkov. Povečan ITM je povezan z nižjo stopnjo gibalno/športne aktivnosti, nižjim fitnes indeksom in nižjim številom dnevno zaužitih obrokov ter večjim številom enot zaužitega mesa in mesnih izdelkov. Zadovoljstvo s telesno maso je večje pri nižjem ITM.

Zaključek: Telesna neaktivnost pomembno prispeva k pojavu debelosti in z njo povezanimi zapleti.

Ključne besede*: gibalna/športna aktivnost, ITM, prehranske navade, debelost, vnetje*

INTRODUCTION

Globally, obesity has reached epidemic proportions. In 2008, 1.5 billion adults, 20 years of age and older, were recognized as being overweight (WHO, 2011). In developed countries, obesity is increasing continuously, especially as obesity arises through a complex combination of lifestyle factors, among them decreasing levels of physical activity (Warburton, Nicol, & Bredin, 2006) and increasing emergence of unhealthy habits such as skipping breakfast and lunch (Berg et al., 2009) as well as an increase

in the consumption of food with a highly concentrated caloric content resulting in an energy imbalance (Prentice & Jebb, 2001). Obesity is associated with a state of chronic low-grade inflammation due to changes in the function of adipocytes and macrophages (Weisberg et al., 2003) and with a variety of metabolic and hormonal dysfunctions such as insulin resistance and dyslipidaemia may lead to increased cardiovascular risk morbidity and mortality (Wexler et al., 2005). The C-reactive protein (CRP), one of the strongest markers of chronic inflammation, is associated with obesity and could be used as a diagnostic marker for cardiovascular diseases (Ridker, 2009).

It has been demonstrated that the risk of being overweight and/or obese are directly associated with physical inactivity and sedentary habits. These include the amount of time spent sitting per week during leisure time (Proper et al., 2006) as well as the time spent in cars and miles travelled by car per week (Frank, Andresen, & Schmid, 2004). Moreover, low levels of physical activity have been shown to be associated with an increased level of body weight (Hughes et al., 2002; Chaput et al., 2011) and with an increased risk of overall mortality and several common diseases and disorders including coronary heart disease, stroke, osteoporosis, diabetes, and so on (Lee et al., 2012). Alternatively, a simple remedy such as the daily implementation of routine physical exercise prevents the occurrence of several chronic diseases (Wadden et al., 2012). In addition, it has been shown that routine physical activity improves body composition (reduced abdominal adiposity and improved weight control), glucose homeostasis and insulin sensitivity, autonomic tone, coronary blood flow and cardiac function, enhances endothelial function, lipid lipoprotein profiles, and reduces blood pressure and systemic inflammation (Vogesser et al., 2007; Greene, Martin, & Crouse, 2012). Chronic inflammation, as indicated by elevated circulating levels of inflammatory mediators such as CRP, has also been shown to be strongly associated with most chronic diseases of which prevention has benefited from exercise (Warburton, Nicol, & Bredin, 2006).

In addition to physical inactivity, suboptimal consumption of fruit and vegetables, an increased consumption of "fast food" or convenience meals (the highly concentrated caloric content foods) leave the modern human in a skewed balance, i.e., when one's energy intake exceeds their energy expenditure. Subsequent studies have shown that an average energy expenditure of approximately 1000 kcal (4200 kJ) per week is associated with a 20-30 % reduction in all-cause mortality (Paffenbarger et al., 1993).

The aim of our study was to investigate the potential association between physical inactivity and food intake with obesity and obesity related disorders in middle-aged adults.

METHODS

Participants

96 healthy participants (66 % females and 34 % males) aged 25-49 years with no history of disorders participated in our cross-sectional study. The study was approved by the Slovenian National Medical Ethics Committee and was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki. All volunteers were fully informed of the procedures before written consent was obtained. The project (A Multidisciplinary Approach in the Treatment of Obesity) was carried out between October and December of 2011 at the University of Primorska, Faculty of Health Sciences in Isola, Slovenia.

Study Instruments and Data Collection

Anthropometric and Other Measurements

The subjects' height was measured to the nearest 0.1 cm in a standing position, without shoes, using Leicester Height Measure (Invicta Plastics Limited, Oadby, England). The body weight of the participants wearing common light indoor clothing without shoes was measured with precision of 0.1 kg. Their body composition was assessed by using the bioelectrical impedance analysis (BIA) Tanita BC 418MA (Tanita Corporation, Arlington Heights, IL). Waist and hip circumferences were measured with measuring tapes to the nearest 0.1 cm. Their pulse rates were measured in a sitting position after a minimum of five minutes of acclimatization. All standardized protocol measurements were performed by the same trained dietician or nurse examiner. The serum concentrations of CRP were measured using Olympus reagents and performed on an AU 680 analyser (Beckman Coulter).

Classification of Obesity

The body mass index (BMI) was calculated using the formulae: weight (kg)/height (m^2). The concepts of overweight and obesity were defined as BMI 25-29 kg/m^2 and $\geq$ 30 kg/m^2 (20), respectively, by a larger than average waist circumference (WC) ($\geq$ 94 cm in men and $\geq$ 80 cm in women), and by a high % of total body fat ($\geq$ 21,5 % in men and $\geq$ 32 % in women). Participants with at least two of these characteristics were classified as members of the overweight group.

Assessment of Physical Activity and Physical Fitness

Physical Activity Estimation by Questionnaire

The Physical Questionnaire AMA, accessible through the web site (http://www.

ama-assn.org), was used to assess physical activity. The questionnaire collected information on the time spent performing physical activities (number of sessions and average time per session), sedentary pursuits; essentially sitting, and physical activity barriers.

Testing Physical Fitness

Physical fitness was assessed to predict maximal oxygen uptake and to measure the ability of brisk walking. Functional status was assessed by reported estimate on ability to low intensity walking for 2 km according to UKK walk test programme (Institute for Health Promotion Research, Tampere, Finland. The walking time was recorded; the pulse rate was measured on cervical aorta by 15 seconds and multiplied by 4. Fitness index (FI) was calculated on the base of the mentioned programme developed by UKK, based on age, BMI, walking time and pulse using the following formulas:

for male: [FI = 420 + A*0.2 – T*11.6 – P*0.56 – BMI*2.6] and

for female: [FI = 304 + A*0.4 – T*8.5 – P*0.32 – BMI*1.1],

whereas A = age; T = time of walking in minutes, seconds; P = pulse; BMI = body mass index. Interpretation of FI measurements is: 1) FI < 70 (significantly low); 2) FI 70-89 (under average); 3) FI 90-100 (average); 4) FI 111-130 (above average); and 5) FI > 130 (significantly high).

Resting Metabolic Rate Measurement

Hand-held indirect calorimeter (MedGem® Microlife) (Medical Home Solutions, Inc., Golden, CO) was used for measuring resting metabolic rate (RMR). RMR measurement conditions were standardized for all subjects, by following a standardized protocol the day before the measurement took place: no eating, drinking, physical exercise and smoking for 12 hours and resting for 10 minutes prior to the measurements.

Dietary Assessment Using 3-day Weighted Food Records

The subjects were instructed to record their food intake for three consecutive days (two weekdays and one day during the weekend). Where possible, subjects were asked to include food labels and recipes for mixed dishes and were encouraged to avoid any alterations to their normal diet. They were taught to weight and record all food and beverages immediately before eating and to weigh and describe any leftovers (EFSA, 2009). Dietary data were analysed using a web application for the analysis of food diary, named Open Platform for Clinical Nutrition. The consumption of units of milk and milk products, vegetables, fruits, starchy food, legumes, meat and meat products, fat and fatty foods and sugars were calculated from this 3-day food record. A food unit represents the net amount consumed without waste, and each unit of the selected food group contains similar amounts of carbohydrates, proteins, fats and energy. Therefore, a unit from a selected food group can be substituted with a unit from any other food group (Table 1).

Table 1: Nutritional composition and energy value of one unit of food from each group.

Group	Carbohydrates/ (g)	Proteins/ (g)	Fats/ (g)	Energy/ (kJ)	Energy/ (kcal)
Milk and milk products/	10	7	3	400	95
Vegetable	5	2	-	118	28
Fruit	15	-	-	250	60
Starchy food	15	2	-	300	70
Legumes	15	5	-	370	83
Meat and meat products	-	7	7	390	93
Fat and fatty food	-	-	5	200	48
Sugars	10	-	-	170	40

Questionnaire on Eating Habits and Satisfaction with Weight

The questionnaire on eating habits is a self-administered questionnaire that contains 4 questions. The subjects were asked about the frequency of meals on weekdays and at weekends, the frequency of consumption of meals away from home and to report how often in the past month they ate fast food, convenience food and junk food. In addition, participants were asked about the satisfaction with their current weight which was assessed through the answers to the question "Are you satisfied with your current weight?", which needed to be answered according to a 5-point scale ranging from 1 (completely) to 5 (never).

Statistical Methods

To describe the characteristics of the overweight and normal weight group, the mean values with standard deviations and proportions were calculated and statistically analysed using the IBM SPSS version 19.0 (SPSS Inc, Chicago, IL, USA). Two groups were formed in respect to BMI, percentage of total fat, and WC. All anthropometric variables and lifestyle factors were compared between the studied groups and by gender using the Student´s t-test. The p value of less than 0.05 was taken as a statistically significant difference between the tested parameters. The Pearson´s correlation test (r) was used in the second stage for identifying the correlation between the BMI and lifestyle factors.

RESULTS

Table 2 summarizes the anthropometric and life style parameters of 48 normal weight and 48 overweight participants. No significant difference of age was observed between the studied groups. Statistically significant differences between these two groups were observed in BMI, WC, the percentage of fat mass, visceral fat rating,

RMR, CRP, satisfaction with weight, and pulse rate values being higher in the overweight group compared to the normal weight group (Table 2). The higher RMR observed in the overweight is consistent with a higher cost of activities, probably due to a higher body weight.

When relating BMI to various subjects' lifestyles, no statistically significant differences in the prevalence of obesity by spending time sitting were found, but a statistically significant difference regarding physical activity and physical fitness was found. In terms of minutes per week, physical activity was significantly higher in the normal weight group compared with the overweight group. Similar results were obtained in terms of the frequency of physical activity per week and for the physical fitness.

Table 2: Basic anthropometrical, physical, and biochemical parameters of the overweight and normal weight group.

	Overweight group	Normal weight group	*p*
	M± SD	M± SD	
Participants (n)	48	48	ns
Age (y)	38.8 ± 6.1	36.5 ± 6.3	ns
BMI (kg/m2)	29.4± 2.7	21.9 ± 2.4	0.0001**
Waist circumference (cm)	94.4 ± 7.7	76.1 ± 8.1	0.000***
Hip circumference (cm)	107.5 ± 7.8	92.6 ± 6.5	0.000***
Fat mass (%)	33.7 ± 7.7	21.4 ± 6.4	0.000***
Visceral fat rating	7.8 ± 2.1	3.3 ± 1.7	0.000***
Systolic blood pressure	126.7 ± 18.5	122.3 ±15.4	ns
Diastolic blood pressure	76.1 ± 10.2	70.5 ±12.1	0.016*
Pulse rate (beat per min)	64.5 ± 21.2	53.9 ± 27.7	0.038*
Body temperature (°C)	36.8 ± 0.5	36.5 ± 0.5	0.025*
RMR (kcal/day)	1604 ± 350	1459 ± 300	0.032*
CRP (mg/l)	3.02 ± 3.00	0.84 ± 0.82	0.000***
Physical activity (frequency per week)	1.8 ± 1.5	3.0 ± 2.1	0.001**
Physical activity (min per week)	110 ± 82	180 ± 156	0.008**
Fitness index	82.3 ± 15.6	107.9 ± 14.9	0.000***
Sitting time (h/day)	6.9 ± 3.3	7.4 ± 3.7	ns
Dissatisfaction with weight	3.73 ± 1.14	2.15 ± 0.96	0.000**
No. of meals (per day)	3.3 ± 0.8	3.7 ± 0.8	0.012*
No. of junk food meals (per week)	0.6 ± 1.1	0.7 ± 1.5	ns
No. of convenience food meals (per week)	0.8 ± 1.5	0.5 ± 0.9	ns
No. of meals eaten outside (per week)	3.8 ± 4.3	3.9 ± 3.5	ns

Note: RMR, resting metabolic rate; CRP, C reactive protein.
*The mean difference is significant at the 0.05 level; ***p < 0.001, **p < 0.01, *p < 0.05.*

Figure 1 presents the most common barriers for overweight participants to be physically active: lack of time, being lazy, being at work/working a lot, and in the case of women, not having enough motivation.

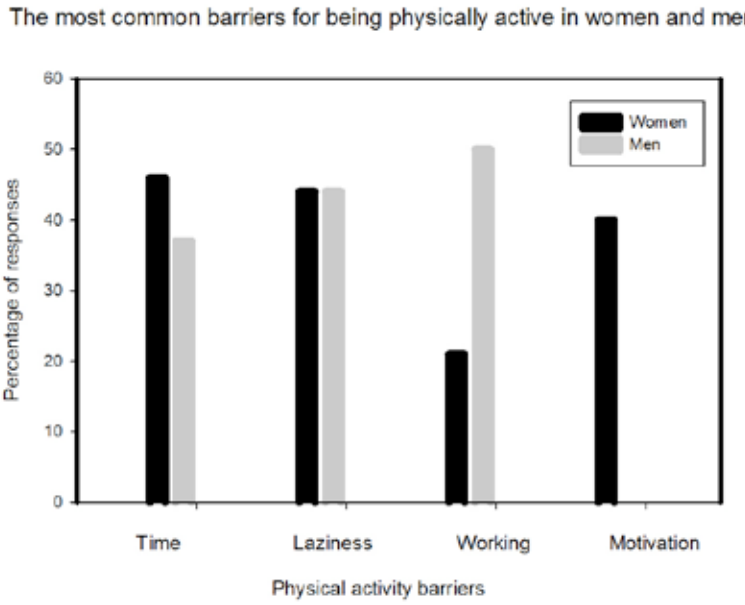

Figure 1: The most common barriers for being physically active in overweight participants.

In the overweight group, other reasons for not being physically active are the following: relying on cars and public transportation instead of walking or cycling to their place of work. In the overweight group only 2 % of the participants reported walking or cycling to and from work, while in the normal weight group this percentage was 25 % (data not shown). Regarding dietary habits a statistically significant lower number of meals per day were found in the overweight group. No statistically significant differences were found in the prevalence of obesity by consuming fast food, convenience food and junk food meals in terms of numbers per week and by meals eaten outside home. Table 3 presents the amount of nutrient intake evaluated from the 3-day food record. No statistically significant differences were found in energy intake, consumption of milk and dairy products, vegetables, fruits, legumes, starchy food, fat and fatty foods and sugars between overweight and the control group. On the other hand, a statistically significant higher value was found regarding the number of units of meat and meat products consumed per day in the overweight group.

Table 3: The amount of nutrient intake evaluated from the 3-day food record for the overweight and normal weight group.

Characteristic	Mean ± standard deviation		*p*
	Overweight group	Normal weight group	
Energy intake (kcal/day)	2083 ± 696	2016 ± 560	ns
The no. of units of milk and dairy products (per day)	2.51 ± 1.46	2.74 ± 1.44	ns
The no. of units of vegetables (per day)	1.66 ± 1.41	1.9 ± 1.8	ns
The no. of units of fruit (per day)	1.9 ± 1.6	2.3 ± 1.9	ns
The no. of units of starchy food (per day)	8.8 ± 4.2	8.3 ± 2.7	ns
The no. of units of legumes (per day)	0.55 ± 1.8	0.46 ± 1.1	ns
The no. of units of meat and meat products (per day)	4.6 ± 2.7	3.2 ± 1.5	0.003**
The no. of units of fat and fatty foods (per day)	9.2 ± 4.2	9.2 ± 3.9	ns
The no. of units of sugars (per day)	4.2 ± 5	4.3 ± 3.2	ns

*Note: The mean difference is significant at the **$p < 0.01$.*

As evident from Table 4, Pearson's correlations were performed to investigate the possible associations between BMI and lifestyle parameters (frequency of physical activity, number of meals per day, meat and meat products), and satisfaction with weight. A negative correlation was found between BMI and the frequency of physical activity (minutes per week and frequency per week), and number of meals per day. On the other hand, positive correlations were found between BMI and dissatisfaction with weight and consumption of meat and meat products.

Table 4: Correlation between BMI and lifestyle factors

		Frequency of physical activity	No. of meals per day	Dissatisfaction with weight	Meat and meat products
BMI	Pearson correlation (r)	-0.273	-0.237	0.396	0.335
	Statistical significance (*p*)	0.008**	0.02*	0.000**	0.001**

*Note: * Correlation is significant at the $p < 0.05$; ** $p < 0.01$*

DISCUSSION

Physical inactivity, changed eating habits, and eating in fast food restaurants are the most important reasons for an increasing number of people in Europe being at risk in reaching overweight and obesity (Rosenheck, 2008; Axelsen et al., 2012). From the aspect of unhealthy habits, the findings of our study provide evidence for the high prevalence of low level of physical activity of the participants from the overweight group. Although increasing physical activity is an effective therapy for weight loss, higher physical fitness may also emerge as a promising treatment for reducing overall inflammation and contribute to clinical benefits (Beavers et al., 2010). Given that physical activity and obesity are inversely related, it is not clear as to whether the anti-inflammatory health benefits of a physically active lifestyle are due to exercise per se or are the result of favorable changes in body composition (Calder et al., 2011). Indeed, we observed a significantly higher value of CRP in the overweight group compared to the normal weight group.

Furthermore, we observed a significant negative association between physical activity and BMI, probably because the "modern environment" is one in which technological advances have eliminated many reasons of physical activity (Ng & Popkin, 2012). Many personal variables, including physiological, behavioural, and psychological factors, may affect the participants' plans to become more/less physically active. Three most common reasons which participants cite for not adopting more physically active lifestyles are lack of time, laziness, work, and also motivation. Similar results were also shown in other studies (Paffenbarger et al., 1993; Proper et al., 2006; Wadden et al., 2012).

The equivalent of at least 150 min/wk of moderate-intense physical activity is necessary to realize health-related improvements (Pate et al., 1995). We found that the quantity of physical activity in the overweight group was under the minimum of official public health recommendations. These findings suggest that especially the overweight individuals should be encouraged to exercise.

Physical fitness, which generally increases with increased physical activity, may also attenuate obesity-related mortality (Wadden et al., 2012). The perceived physical fitness is an integrated result of the functional status and health of many organ systems, in which particularly the cardio-vascular system plays a pivotal part. In our study we observed different physiological effects of exercise which in normal weight group resulted in lower pulse rate and lower systolic and diastolic blood pressure. Similar results were described by other research groups (Monteiro & Sobral Filho, 2002; Huang et al., 2013). Interestingly, the results of our study didn't show any statistically significant differences in time spent sitting in the overweight group in comparison with the normal weight group. The reason for this is probably a small sample size and probably over-reporting of physical activity by the overweight participants compared to normal weight participants.

Besides physical inactivity, unhealthy dietary habits have also contributed to the explanation of the observed obesity pandemia. Naturally, dietary patterns are an important

risk factor, which can be easily modified, and the recent efforts of public health institutions have been directed towards implementing healthy eating patterns in order to improve the health of general population (Hamer & Mishra, 2010). We found a statistically significant difference in terms of number of meals per day, where the overweight group reported fewer meals per day than the normal weight group. Conflicting results can be seen in the relationship between eating frequency and obesity (McCrory & Campbell, 2011). Leidy and Campbell suggest that increased eating frequency (more than 3 meals/day), has minimal, if any, impact on appetite control and food intake, whereas reduced eating frequency of less than 3 meals/day negatively affects the control of appetite (Leidy & Campbell, 2011). In the case of energy intake evaluated from the 3-day food record, no statistically significant difference was found between the overweight and normal weight group. Similar results have also been reported in the Berg's study (Berg et al., 2009). A possible explanation for our results may be a deliberate underreporting of dietary intake by the obese participants. Similar findings have also been shown by Goris (Goris et al., 2000). Indeed, the participants in our study reported that weighing food discouraged them from eating. Furthermore, no statistically significant differences were found between the two groups in the consumption of starchy food, fruits, vegetables, sweets, fats, legumes and milk. In our study, especially the consumption of vegetables was very low in both groups. A significant positive correlation was found between BMI and consumption of meat and processed meat between the overweight and the normal weight group. This could be explained by the fact that meat and processed meat is associated with high-fat, especially saturated fatty acids consumption, and such dietary patterns, including higher proportions of energy from meat proteins were shown to be associated with the risk for obesity (Murtaugh et al., 2007; Wang & Beydoun, 2009). Moreover, the increased consumption of higher caloric foods, like fast food and convenience meals is also known to induce changes in the control of appetite in the human organism (Prentice & Jebb, 2011) and those who consume fast food less than once a week show a higher probability of having a healthier nutrition than those who consume fast food once or more per week (Moore et al., 2009). Interestingly, in our study no differences were found in the consumption of fast food, junk food and convenience meals between the overweight and the normal weight group.

CONCLUSION

Our study provides evidence on the high prevalence of low level of physical activity of the participants from the overweight group compared to the normal weight group and bad dietary habits in both groups.

Since poor dietary habits and physical inactivity are associated with many adverse health outcomes, most adults could benefit from interventions designed to improve their eating habits and increase their daily activity levels. Such interventions include the promotion of active life style and good eating habits early in life. A regular consumption of fruits and vegetables is one of the good eating habits, moreover, adequate

daily intake of foods from these groups has a positive impact on the health and helps fighting obesity (Sartorelli et al., 2008). Our recommendation is that the fruit and/or vegetables must be present in every meal of the day. This provides a lower energy density of meals and prevents overeating.

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PHYSICAL SELF-CONCEPT, ANTHROPOMETRY AND BODY COMPOSITION IN PREADOLESCENTS

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ABSTRACT

The main aim of this study was to determine the relationship of morphologic features and body composition to physical self-concepts in boys and girls separately. This research included 630 children from north-eastern Slovenia, aged 9 to 11 years (M = 10.01; SD = .810), of which 311 were boys and 319 were girls. Morphologic features of the children were measured with the use of a standardized anthropometric instrumentation; the Maltron BF-907 Body Composition Analyzer was used for the measurement of body fat, fat-free mass, and body water proportions. The gender, age, and physical self-concept data were acquired through the French version of The Physical Self-Inventory – a short form questionnaire for determining the physical self-concept of adolescents, adapted to Slovenia. The relation between individual morphological features and physical self-concept was determined by regression analysis. Statistical significance was established at 0.05. The results show that the physical self-concept is more closely connected with body composition and morphologic features in boys than in girls, whereas the body fat proportion is the strongest predictor of physical self-concept in boys. The findings show that, particularly in boys, the physical self-concept is also largely based on the morphologic features and body composition. It is necessary to give special attention to boys, as we often think that boys are not as concerned with the physical appearance as girls.

Key words: *physical self-concept, physical development, general self-concept, body measurements, body fat, pupils*

TELESNA SAMOPODOBA, ANTROPOMETRIJA IN SESTAVA TELESA V PREDADOLESCENCI

IZVLEČEK

Namen raziskave je bil ugotoviti povezanost med morfološkimi značilnostmi, sestavo telesa in telesno samopodobo ločeno pri dečkih in deklicah. V raziskavi je sodelovalo 630 otrok iz severovzhodne Slovenije, starih od 9 do 11 let (M = 10.01; SD = .810, od tega je bilo 311 dečkov in 319 deklic. Morfološke značilnosti otrok so bile izmerjene z uporabo standardiziranega antropometričnega instrumentarija, za meritve deleža maščevja, brezmaščobne mase in vode pa je bil uporabljen analizator sestave telesa Maltron BF-907. Podatki o spolu, starosti in telesni samopodobi so bili pridobljeni s pomočjo poslovenjene različice francoske verzije vprašalnika za ugotavljanje telesne samopodobe mladostnikov The Physical Self-Inventory – short form. Za ugotavljanje povezanosti posameznih morfoloških značilnosti s telesno samopodobo je bila uporabljena regresijska analiza. Statistično značilnost smo ugotavljali na ravni tveganja 0,05. Rezultati kažejo, da je telesna samopodoba tesneje povezana s sestavo telesa in z morfološkimi značilnostmi pri dečkih kot pri deklicah, pri čemer na telesno samopodobo dečkov najbolj vpliva delež maščevja v telesu. Ugotovitve kažejo, da, predvsem pri dečkih, k predstavi o telesni samopodobi v veliki meri prispevajo tudi morfološke značilnosti in sestava telesa. Posebno pozornost je potrebno nameniti tudi dečkom, za katere nemalokrat menimo, da z zunanjim videzom niso tako obremenjeni kot deklice.

Ključne besede: *telesna samopodoba, telesni razvoj, splošna samopodoba, morfološke dimenzije, šolarji*

INTRODUCTION

Self-concept is a psychological phenomenon that the researchers have been scientifically addressing since the end of the 19th century. Self-concept is a cognitive representation of one's self that includes perception of self, the assessment of one's abilities, the positions and notions about facing life challenges, and the awareness of directing one's life (Brake, 2007) and is a sum of self-efficacy and self-esteem. The forming of self-concept represents one of the key developmental objectives of childhood and adolescence that runs from the state of relative generality and non-differentiation to the state of bigger complexity, segmentation and hierarchical regularity (Schaffer, 1996).

Shavelson, Hubner, and Stanton (1976) proposed the first complex theoretical model of self-concept. They defined self-concept as an individual's perception of self that is formed based on experiences and through interpretation of one's social environment and is under the influence of assessment by important others (Marsh, 2005). Shavelson, Hubner and Stanton (1976) anticipated that the self-concept construct is multidimensional and hierarchical. Multidimensionality means that there is no single self-concept

construct but that there are several different constructs for each individual (academic self-concept, social self-concept, emotional self-concept, and physical self-concept). Hierarchicalism of the model refers to its regularity that runs from the more abstract factors on the top to more specific ones at the bottom of the hierarchy.

Physical self-concept represents a mental image of one's own body that is formed in our minds (Schilder, 1999) and is not necessarily related to the actual physical appearance of an individual (Cash, 1997). In the past physical self-concept has often been neglected but today it is considered an important component of global self-concept and is frequently the subject of studies (Planinšec & Čagran, 2003).

Physical self-concept represents one's perceptions, thoughts, and feelings about one's own body and is greatly influenced by the morphologic features of the individual's body of which we are constantly aware. Individuals develop some kind of a relationship with themselves that influences their value assessment of self as a whole (Grogan, 1999). The perception relates to the assessment of morphologic features, thoughts relate to evaluation of physical attraction, and feelings relate to the shape and size of the body. On the basis of the Shavelson, Hubner, and Stanton's self-concept model (1976) where physical self-concept as one of the areas of non-academic self-concept consists of physical activities and physical appearance, Fox and Corbin (1989) developed a multidimensional hierarchical concept of the physical image of self. The only difference between their model and the one from 1976 is that instead of two sub-areas, physical self-concept now consists of four sub-areas: appearance, strength, endurance, and sports competences. Of all the areas of self-perception the physical self-concept seems the most elementary as it begins to form in the earliest childhood of an individual's life and is crucial for forming other elements of self-concept that develop later (Dolenc, 2007) and as such has a special place in the self-concept structure as the body is, through its appearance, abilities, and characteristics, an intermediary between an individual and the outside world (Fox, 1997). By growing up the self-concept of children becomes more and more structured and complex (Gonzales, Perez, Gonzales, & Garcia, 1997; Marsh, Craven, & Debus, 1998).

The modern way of life, which in developed countries means a mainly sedentary life style and less physical activity, has an important impact on the changes of people's morphologic features and body composition. If we add excessive and often also bad or unhealthy eating habits, nowadays the excessive body weight and obesity already seen in children is a logical consequence. Body weight, along with other morphologic features, affects the individual's physical appearance most visibly. Body weight relates in particular to health issues, however most people deem morphologic features more important in connection with physical appearance than health (Tomori, 1990). Of course we cannot equate appearance with physical self-concept, but we can draw a conclusion that with the changes of people's morphologic features their relation to these and also their physical and overall self-concept change as well. Previous studies dedicated a lot of attention to determining the effect of physical activity and physical ability on physical self-concept (Fridlund Duton, Schneider, Graham, & Cooper, 2006) and to determining the effect of physical activity, morphologic features, and body composition

on physical self-concept (Fox, 2000; Anderson, Murphy, Murtagh, & Nevill, 2006). In the adult female population, changes in morphologic features as a consequence of sport activities have a limited impact on changes of physical self-concept as the reason for improving physical self-concept is more likely to be found in the individual's expectation of physical progress (Anderson, Murphy, Murtagh, & Nevill, 2006). Fox's (2000) findings confirm that the individual's feeling that by exercising they improve their morphologic features and body composition is enough to improve their physical self-concept. Bailey, Goldbergh, Swap, Chomitz and Houser (1990) and Davis (1997) claim that there is a positive correlation between dissatisfaction with one's own body in women and body weight, proportion of body fat, and specific morphologic features such as the size of hips, buttocks and stomach. Garner, Olmstead and Polivy (1983) discuss that dissatisfaction with the abdomen greatly contributes to negative physical self-concept. To be able to define the relation between the changes of morphologic features due to physical activity and changes of physical self-concept more clearly the study would have to include more morphologic features and body composition measurements. Therefore, it seems reasonable to first study the relation of the morphologic features and body composition to physical self-concept independently of physical activity. The purpose of this research is to determine the connection between morphologic features and body composition and the physical self-concept of adolescents and which dimensions of morphologic features and body composition are the strongest predictor of the physical self-concept of girls and boys.

METHODS

Participants

The sample consisted of 630 children, aged from 9 to 11 years (M = 10.01, SD = .810). the participants were recruited from various primary schools of north-eastern Slovenia. Data were collected as a part of research project No. V5 — 0232, examining the impact of certain socio-cultural factors on children's growth and physical fitness. During the assessment, the children were healthy and there were no other special conditions that might have impeded their physical activity. The parents or guardians provided the consent. The study was approved by the Institutional Review Board at the University of Maribor, Slovenia.

Measures

Anthropometric assessment. Morphologic features of children were measured with the use of standardized anthropometric instrumentation. Standing height was measured with Martin's anthropometer and was used, with an accuracy of 0.1 cm, with

shoes removed, feet together, and head in the Frankfort horizontal plane. Body mass was measured with a calibrated Seca Beam Balance 710, with an accuracy of 0.1 kg, with shoes, sweaters, coats, and jackets removed. Triceps skin fold was measured with Lange skinfold caliper calibrated to accuracy +/- 1mm. All correlation coefficients of anthropometric measurements are statistically significant ($p < 0,001$). In addition, all correlation coefficients of anthropometric and body composition measurements are statistically significant ($p < 0,001$). The results confirm intra and inter validity of morphological and body composition measurements.

Body composition assessment. For the measurement of body fat, fat-free mass and body water proportions the Maltron BF-907 Body Composition Analyzer was used. The measuring was carried out by skilled and verified measurers. All correlation coefficients of body composition measurements are statistically significant ($p < 0,001$).

Physical self-concept

The gender, age, and physical self-concept data were acquired through the adopted questionnaire for assessing physical self-concept of adolescents, The Physical Self-Inventory – short form (PSI-SF) (Maïano et al., 2008). This is a short version of the Fox and Corbin (1989) Physical Self-perception Profile, L'inventaire du Soi Physique questionnaire (Ninot, Deligniéres, & Fortes, 2000). Three statements together comprise one of the six dimensions of physical self-concept. The verifying of metric characteristics was not necessary as it had been done in the previous studies (Maïano et. al., 2008), however the high reliability of the Slovenian version of the questionnaire was additionally determined (Pepevnik, 2009). The Cronbach alpha coefficient ($\alpha = 0.824$) showed that the internal consistency is good. The questionnaire for assessing physical self-concepts of the adolescents comprised 18 questions in which children could express their agreement or disagreement with the statements relating to the specific areas of physical self-concept (physical abilities, physical appearance etc.) on a 6-point scale. The highest level of agreement was rated with a mark of 6 and the lowest level of agreement was a mark of 1, except in statements 3, 5, and 14 that were inversely scored. As it is presented in The Physical Self-Inventory – short form (PSI-SF) manuals (Maïano et al., 2008) the sum of all answers represents the physical self-concept score.

Procedure

The measurements were carried out in spring, always before noon in a specially prepared room. The entire testing of one child did not exceed one hour. All measurements were carried out by qualified experts. All children who participated in the study were given identification numbers. These numbers were used instead of names throughout

the assessment, both in assessment of morphologic features and later in the survey. This procedure ensured the anonymity of every participant in the study. First, the chief measurer explained the measuring procedure to the children and then the children were divided into groups for each measuring post. In the research morphologic features (body height [cm], body weight [kg], waist circumference [cm], triceps skin fold [mm]) and body composition (fat free mass [FFM%], fat mass [FM%] and total body water [TBW %]) were measured. Fat, fat-free mass and body water proportions were measured with the Maltron BF-907 Body Composition Analyzer. We placed two electrodes on the subject's palm and leg. We entered the data on body height, weight, and age of the subject into the analyzer and let a weak current (less than 280 μA) that the subject could not feel through the subject's body. This enabled us to calculate the bioelectric conductivity of tissues in order to gain the data on the body fat, fat-free mass, and water in the subject's body. The measurers brought all the necessary instruments as these are not part of the standard primary school equipment. The measurers entered the results of the measurements in the tables prepared in advance where instead of names the aforementioned identification numbers appeared. Children filled in the questionnaires on physical self-concept of adolescents before the measurements of morphologic features were conducted.

Data Analyses

Before data analyses the screening procedures tested assumptions for parametric tests (normality, linearity). The Kolmgorov-Smirnov test showed that the distributions of body weight, body mass index, waist circumference, triceps skin fold, and total body water variables values statistically significantly deviate from normal distribution, therefore normalization of data for these variables was performed. Pearson correlations examined the bivariate association between body composition and physical self-concept. The unique contributions of anthropometric and body composition measurements to physical self-concept were determined through multiple-regression analyses with body height, body weight, body mass index, triceps skin fold thickness, waist circumference, percentage of fat-free mass, percentage of fat mass, and percentage of total body water. Age was entered as a control variable. Separated regression analyses were performed for each gender. Statistical significance was set at an α level of 0.05. There were no missing values.

RESULTS

First we present the results of the analysis of connection, then the regression analysis and thereby the prediction of physical self-concept by morphologic features and body composition. Boys assessed their own physical self-concept in the range between 26 and 106 (M = 74.71, SD = 17.35) and the girls in the range between 28 and 107 (M

= 71.14, SD = 14.05). With both groups of subjects the values of standard deviations point to somewhat higher dispersion of the results.

Bivariate Relationship between Physical Self-Concept, Anthropometric Measurements and Body Composition Measurements

Table 1 shows bivariate correlations between morphologic features and body composition measurements and physical self-concept indicators. In boys, physical self-concept is in negative correlation with body fat proportion, triceps skin fold thickness, waist circumference, and body weight ($p < .001$) and in positive correlation with fat-free mass proportion and total body water ($p < .001$). In both boys and girls, there is no correlation between body height and physical self-concept. In girls, physical self-concept is negatively correlated to waist circumference and body weight ($p < .01$) and triceps skin fold thickness ($p < .05$), while fat-free mass, total body water and body fat are not correlated with physical self-concept.

Table 1: Bivariate Correlations among Physical Self-Concept, Anthropometric Measurements and Body Composition Measurements and Descriptive Statistics in Boys and Girls

		Mean (SD)		Physical Self- Concept	
		male	female	male	female
Anthropometric Measurements	body height (cm)	147.46 (7.88)	148.49 (9.12)	-.036	-.084
	body weight (kg)	44.16 (10.98)	43.19 (11.65)	-.297***	-.172**
	triceps skin fold thickness (mm)	13.78 (5.62)	13.55 (5.13)	-.373***	-.157*
	waist circumference (cm)	72.76 (11.20)	70.39 (10.23)	-.319***	-.187**
Body Composition Measurements	fat-free mass (%)	79.32 (9.06)	78.36 (7.42)	.351***	.108
	total body water (%)	58.20 (5.53)	57.83 (4.85)	.336***	.044
	Body fat (%)	20.40 (8.28)	21.63 (7.42)	-.436***	-.095

$*p < .05$, $**p < .01$, $***p < .001$

Independent Prediction of Physical Self-Concept by Anthropometrics Measurements and Body Composition Measurement

The independent prediction of physical self-concept by anthropometrics measurements and body composition measurement was conducted with the use of multiple regression analysis. In Table 2 we can find standardized regression coefficients (β) and the overall coefficient of physical self-concept determination (adj.R^2), separately for boys and girls. The results show that morphologic features and body composition variables are not statistically significant predictors of the girls' physical self-concept; both account for only 1.5 % variance of physical self-concept (R^2 = .015). Therefore, the predicting power of these variables regarding physical self-concept is very small. In boys, morphologic features and body composition are statistically significant ($p < .001$) connected to their physical self-concept; which implies that 18 % of variance in physical self-concept (R^2 = .180) is explained by morphologic features and body composition. Table 2 shows that the results in physical self-concept of boys are explained with statistical significance only ($p < .01$) by the proportion of body weight. The regression coefficient (β = -0.401) shows that boys with a larger proportion of body fat have lower physical self-concept compared to peers with a lower proportion of body fat. Regression coefficients (β) are also high when there is a correlation between physical self-concept and body weight, waist circumference, and body height, but they are not statistically significant in any of these cases.

Table 2: Summary of Multiple Regression Analyses for Variables Predicting Physical Self-Concept

		Standardized Coefficients β		Overall adj. R2	
		male	female	male	female
Anthropometric Measurements	body height	0.159	-0.007		
	body weight	-0.267	-0.001		
	triceps skin fold thickness	-0.094	-0.033		
	waist circumference	0.171	-0.209		
Body Composition Measurements	fat-free mass	-0.010	-0.075	.180***	.015
	total body water	-0.055	-0.210		
	Body fat	-0.401**	-0.178		

DISCUSSION

This research finds that morphologic features and body composition are related to physical self-concept of older children whereas it is obvious that these correlations are stronger in boys than in girls. There is an extremely negative correlation between physical self-concept and all the measurements that determine the amount of body fat and body weight. The results of the regression analysis show that the body fat proportion is the strongest predictor of physical self-concept in boys, while in girls no morphologic feature or statistically significant body composition variable predicts the physical self-concept. The results are surprising since the adolescent spurt occurs earlier at girls than at boys. During the early part of the adolescence period, girls are taller and heavier than their male peers. Later on, as adolescent spurt occurs at males, they surpass the girls (Malina, Bouchard, & Bar-Or, 2004). It is interesting that in boys a statistically significant prediction of physical self-concept is shown only for the proportion of body fat which cannot always be determined merely by sight but requires a bioelectric analysis. On the other hand, body height, which is one of the most obvious morphologic features, is in no way related to physical self-concept. It should be emphasized that both the morphologic features and body composition were measured by reliable and valid instrumentation. The reliability and validity of the original questionnaire on the physical self-concept PSI-SF (Maïano et. al., 2008) were verified in advance as well as subsequently the Slovenised version of the questionnaire (Pepevnik, 2009). The results of the research show high statistically significant ($p < .001$) correlation between boys' physical self-concept and all the body composition measurements and triceps skin fold thickness and a somewhat lower ($p < .01$) but still statistically significant correlation between the physical self-concept and the morphologic features parameters (body weight and waist circumference). In girls, physical self-concept has a statistically significant ($p < .05$), but low correlation only with body weight and waist circumference, while there is no statistically significant correlation between the girls' physical self-concept and the body composition measurements. Apparently there is a higher correlation between the physical self-concept of boys, aged 10, and their morphologic features and body composition than in girls of same age. It is therefore shown that at the same age different factors predict the physical self-concept of boys and girls. Supposedly, this is caused by the differences in the timing of cognitive, emotional, social, physical, and movement development between boys and girls that is characteristic for this period. Children also form their perception of their bodies based on the experiences related to their bodies (Dolenc, 2008). The number of experiences related to the body rises with age and is subsequently reflected in the higher correlation of the abovementioned variables. At this age boys are more physically active than girls (Trost et. al., 2002; Riddoch et. al., 2004) and hence they connect physical self-concept more to the morphologic features. The findings of many researches confirm that both physical efficacy and physical activity are closely connected to the subjective assessment of physical self-concept (Fridlund Dunton et. al, 2006). Physical activity contributes to positive general physical self-concept provided it also contributes to improving the physical efficacy (Schneider,

Fridlund Dunton, & Cooper, 2008; Sonstroem, Harlow, Gemma, & Osborne, 1994). Our findings show that, particularly in boys, physical self-concept is also largely based on the morphologic features and body composition. The adolescence period that occurs around the age of 10 or 11 is the most critical period for physical self-concept (Grogan, 1999). This is the period of changes, self-awareness, and search of identity. Particularly in girls, the concern about their physical appearance is the result of physical changes that can draw them away from the slender ideal. The issues surrounding physical appearance and related morphologic features might not be very distinctive in the early adolescence but they progress with age. The findings confirm that the children at the end of late childhood are already aware of their body and its dimensions and that these are connected to their perception of themselves. The efficiency of different approaches for fostering positive physical self-concept depends in particular on parents, teachers and other people. One of the possible limitations of this study is the missing data about the biological age of children, since we can speculate that biologically pre-mature children evolve a more structured sense of self earlier than their biologically not so mature peers. In the future we should concentrate on longitudinal studies that investigate how changes in anthropometrics and body composition influence physical self-concept from early childhood to early adulthood.

CONCLUSIONS

Our research points out that the morphologic features also play an important role in explaining the physical self-concept in children. The problems arise when morphologic features become the source of negative feelings connected to the body. By ensuring a supportive environment that strengthens and fosters a child's self-concept, parents, teachers, and others can redirect the child's attention to the areas at which the child is adept, thereby diminishing the influence of physical appearance on the child's self-assessment and in this way help the child picture themselves more accurately. The results of our research also point out that it is necessary to give special attention to the boys as well, as we often think that boys are not as concerned with the physical appearance as girls.

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WOMEN, FOOTBALL AND EUROPEAN INTEGRATION. AIMS AND QUESTIONS, METHODOLOGICAL AND THEORETICAL APPROACHES

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ABSTRACT

The aim of this article is to introduce a new research topic and provide information about a European research project focusing on football as a means of European integration. Using the results of available studies of the author and other scholars, it is to be discussed whether and how women can participate in football cultures and contribute to a European identity. Based on theoretical approaches to national identity, gender and socialization, as well as and on the analysis of various intersections between gender, football and fandom, it can be concluded that women are still outsiders in the world of football and that it is doubtful whether female players and fans will contribute decisively to Europeanization processes.

Keywords: *Football, Fans, Gender, Women, Identification, European Integration*

ŽENSKE, NOGOMET IN EVROPSKA INTEGRACIJA. CILJI IN VPRAŠANJA, METODOLOŠKI IN TEORETIČNI PRISTOPI

IZVLEČEK

Cilj tega članka je uvesti novo raziskovalno temo in priskrbeti informacije o evropskem raziskovalnem projektu, ki se osredotoča na nogomet kot sredstvo evropske integracije. Članek z uporabo rezultatov razpoložljivih avtorskih študij in drugih raziskovalcev obravnava vprašanji če in kako lahko ženske sodelujejo v kulturi nogometa ter prispevajo k evropski identiteti. Na podlagi teoretičnih pristopov k nacionalni identiteti, spolu in socializaciji ter analiz stičnih točk spola, nogometa in navijaštva lahko zaključimo, da so ženske v svetu nogometa še vedno zunanje opazovalke in da

ostaja odprto vprašanje, če bodo igralke in navijačice odločilno prispevale k postopku evropeizacije.

Ključne besede: *nogomet, podporniki, spol, ženske, identifikacija, evropska integracija*

INTRODUCTION

Since its "invention" in the 19th century in England, football has developed from a boys' game into one of the most popular sports which is played and watched all over the world. In recent years, football fever has gained new dimensions, in particular in Europe, as football supporters and fans follow the game not only in the stadiums or via newspapers and TV, but also via the new media, e.g. the internet, where numerous websites offer the latest football news.[1]

Before the internet era and the globalization of football news, the game was in the foreground of both local and national spectators and it triggered emotional attachment as well as identification with clubs and national teams. Football provided – and it still provides – the opportunity to demonstrate and act out nationalist leanings and emotions.[2]

Sportification processes, in particular the striving for a permanent increase in performance, not only led to continuous advancements in training, technique, and tactics, but also influenced the transfers of players. Clubs buy and sell players in order to improve the performances of their teams, and football stars negotiate salaries which may endanger a club's financial standing. However, before 1995 the hiring of foreign players was restricted.

European integration after WWII and the emergence of the European Union as a political and economic community as well as a common labour market had a large impact on sport, in particular on football. The "Bosman ruling" in 1995 allowed the free movement of professional footballers in Europe, and Europeans who moved from one European club/country to another were no longer considered "foreigners" (e.g. Penn, 2006). This rule opened up the market and increased the influx of non-European players. At the same time, large European clubs like Real Madrid, Manchester United and Bayern München attract an international fan community that follows its teams via the new media. Currently, numerous fans "split" their loyalty between their local club and one of the legendary clubs abroad such as Real Madrid or Manchester United.

Women's football, which was banned by football federations until 1970, experienced a considerable upswing in this period, in particular in Western countries but later also worldwide. In the 1990s famous football clubs such as Paris Saint-Germain, Chelsea FC or Bayern München established women's teams. In addition, independent

[1] See the literature on football consumption and fans in the references.

[2] On the history of football fandom see Hargrave (2007).

women's clubs were founded, for example, the highly successful German club Turbine Potsdam, which is still one of the leading clubs in the country today. In 2001, the UEFA cup for women was established, a competition which became the UEFA Women`s Champions League in 2009. However, the growing popularity of women`s football did not put the game and its players in the "limelight". Women are still a small minority among the players and women's games are seldom in the coverted by the mass media.

There are various reasons for the "outsider status" of women in the world of football, ranging on one hand from the tradition and the image of the game to the activities and practices of players and fans. On the other hand, there are life circumstances of women which must be taken into consideration, along with the prevailing gender ideals, norms and rules. Playing football is not per se an activity which excludes females, as the growing numbers of female players clearly demonstrate.

The popularity of men's football is based on the spectators' identification with clubs and players, where multiple loyalties facilitate cross-border networks, trigger European football dialogues and create imagined communities of predominately male fans, who choose their favorite players and teams in Europe and worldwide (e.g. Sandvoss, 2006; Sonntag, 2008). In this way football audiences and fans are groups who, via their identification with foreign clubs or players and via cross-border communication, e.g. using the new social media, may contribute to the development of a European identity which cannot replace but may complement their identification with the nation state.

The impact of football on European dialogues and transnational identities is currently being explored by a group of scholars collaborating in an international and interdisciplinary research study. The "FREE project" (Football Research in an Enlarged Europe) "seeks to understand the impact of the most popular and most widely shared of all expressions of popular culture, football, on identity dynamics, perception patterns and cultural change in Europe. /…/ The overall objective of the FREE project is to develop a better understanding of football as a highly relevant social and cultural phenomenon in contemporary Europe."[3]

The scholars working on the FREE project are very well aware that football players as well as the consumers and fans are predominately men and that European dialogues with a focus on football exclude those women who are not interested in "football talk" (e.g. Pfister, in press).

One of the six "working packages" of the FREE project focuses on women. The aim of this research strand is "to study the extent to which football's strong tradition of discursive gender construction is being challenged today by what could be termed the 'feminisation' of football. This 'feminisation' finds its causes and expression in the growing number of female fans and increased interest in women's football" (http://www.free-project.eu/research/Pages/Research.aspx). The FREE project thus poses the question: How and to what extent do women actually participate in transnational football encounters and dialogues? The methods of this project will be a combination of qualitative and quantitative approaches, i.e. surveys and interviews in various European countries. The first results will be available in 2014.

[3] http://www.free-project.eu/ with more information on the project.

In this article insights into the opportunities and challenges of women in the world of football will be provided. In addition, the theoretical approaches used in the project, such as gender concepts, social constructivism or approaches to identification will be presented. Moreover, the backgrounds, developments and current issues of both women's football and women's fandom will be outlined. Some of these issues will be explored in the FREE project; others will become the topics of future research.

THEORETICAL APPROACHES, MAIN QUESTIONS AND METHODS

Football Research in an Enlarged Europe – the FREE Project with a Focus on Gender

Everyday knowledge and the available studies show that football is still a male domain. The overwhelming majority of the players and the fans are boys and men.

Drawing on constructivist approaches to gender and identity, football can be described as a bastion of manhood, an arena where diverse forms of masculinity and male identities are constructed, performed and re-produced, not only on the field but also on the stands (e.g. Lenneis & Pfister, in press). Men play in the stadium "serious games of men," displaying and defending their masculinity (Bourdieu, 1997). From this perspective, men's football and male players' discourses and practices can be considered as gender presentations, where playing football is always also "doing gender".

In the recent decades, women's football has gained a measure of acceptance in Europe and beyond. Particularly in countries with strong women's football teams, e.g. Germany or Scandinavia, the 'important' games and tournaments such as the Women's World Championship in 2011 or the European Championship in 2013 attract large audiences in the stadiums as well as in front of TV screens (Pfister, 2013).

At this point, several questions emerge: Does the attention paid to attractive international tournaments enhance interest in women's matches at local, regional, and national levels? Do fans, both men and women, follow and support women's teams? Is the number of women who join the ranks of football supporters increasing and are female supporters present in the stands of hardcore fans? Using the terms of the FREE project, the question must be asked: Are women participating in European football dialogues?

There is a considerable number of studies on fans, predominately the fans of male players and men's teams. However, little is known about the fans supporting women's football. All available information shows that female players and teams do not have many fans and do not receive much media attention. As women form a minority among football fans, it can be assumed that they experience and act out fandom in specific ways, that they have to deal with the sexism of fan groups dominated by men, and that they integrate their attachment to football in diverse "gender projects" (e.g. Lenneis & Pfister, in press).

It is expected that the results of the FREE project will provide information on the issues raised above. A strong focus will be put on women'scontribution to a European football dialogue, on their participation in Europeanization projects, and on European identity adoption via football. These questions must be discussed in the context of the "nation building" enterprises of both genders. The methods used in the FREE project are observations, online surveys, population research and various forms of qualitative interviews.

Gender, sport, and trans/national identities – theoretical considerations

Building and representing a nation or a continent as an "imagined community" seemed for a long time to be not only a male endeavor but also a focus for male scholars. This changed in the 1990s when Yuval Davies, among others, emphasized the crucial, complex, and contested interrelationships of doing gender and building a nation, highlighting women's contributions to not only the biological but also the cultural and symbolical reproduction of a society (e.g. Yuval-Davis, 1997).[4]

Currently, there is a consensus that gender and nation intersect and interact and that gender relations are key dimensions of nation-building projects (Sluga, 1998; Nagel, 1998). The same is true of projects of Europeanization, which refer to the development of common paradigms, norms, rules and practices based on and driven by dialogues and identification processes of both genders and resulting potentially in a redefinition and repositioning of national and regional identities within a European context.

Numerous studies indicate the importance of men's sport and men's football for national representation and identity formation, as well as for a common passion and a potential attachment to Europe (e.g. Sonntag, 2008). However, international events such as the Olympic Games and international tournaments such as the Champions League not only serve as demonstrations of the – imagined – strength of the participating nations but also enable transnational identification processes with outstanding athletes and players (see the contributions in Kreisky & Spitaler, 2006; Fritzsche, 2010). Up to now, little attention has been paid to the intersections of sport, gender, and national or regional identities and to the question whether and how sportswomen and female teams, as well as female fans, may foster identification, represent their nation and, at the same time, contribute to transnational dialogues and European integration.

The focus on gender and its impact on national or European identities/subjectivities raises the question as to the meaning of both concepts. From the perspective of cultural studies, identity is continuously created and re-defined in and through interactions within multiple discourses and practices (Davies, 2000). According to Eley and Suny (1996, p. 10) "the multiplicity, fluidity, contextual and contested qualities of identities that studies of gender have highlighted have undermined any notion of a single, all-embracing primary identity to which all others must be subordinated at all times and costs".

[4] On theoretical approaches to nationalism see Day & Thompson 2004.

Gender theories, too, have "taken on the most naturalized of all categories, gender, and destabilized our understanding of the 'natural' roles and capacities of women and men" (Eley & Suny, 1996, p. 10). Lorber (2005, p. 6) emphasizes the importance of gender categories in societies and understands gender as "a binary system of social organization" which is embedded in subjectivities, presented in social encounters and "embodied." Drawing on Connell, gender has to be considered as "social embodiment," where bodies are both objects of and agents in social practice (Connell, 2002, p. 47). Gender researchers agree that gender is not something we are or we have but, according to Rakow (1986, p. 19), "something we do and something we think with, both a set of social practices and a system of cultural meaning." By doing gender and thinking in terms of gender we re-produce gender differences in everyday life, and "once the differences have been constructed, they are used to reinforce the 'essentialness' of gender" (West & Zimmermann, 1991, p. 24). Sport is a concept and a practice which systematically identifies and "naturalizes" differences, including differences between women and men. Doing sport and/or acting as a fan is always also doing gender.

Fandom is acquired in lifelong gendered socialization processes which begin with the initiation of children, boys as a rule, into the brotherhood of predominately male fans (Pfister, 2007; Lenneis & Pfister, 2014 in press). Theoretical approaches to socialization can provide a framework for an understanding of fan biographies and fan behavior (Pfister, 2014 in press).

Doing sport is always presenting oneself as a man or as a woman; it is always doing gender. Although in most sports men and women do not compete with each other, gendered hierarchies emerge. There is 'real' football and women's football, which is often portrayed as a less attractive copy of the men's game. 'Real football' is still a masculinity display staged for a male audience. It is an open question whether the increasing interest of women in playing and consuming football will change the gender order on and off the football field. Although women's football has experienced a considerable increase in public attention in the context of international tournaments, studies have revealed that this enthusiasm has not necessarily been transferred to women's football league matches, which still receive little public attention and very little media coverage. Football is still a man's affair.

RESULTS OF AND APPROACHES IN AVAILABLE STUDIES

Football and gendered fan communities

As stated above, men's football has developed from a pastime of English schoolboys into a spectacle which has an unequalled capacity for mobilizing the masses throughout Europe. The game promotes commonly shared symbols and values, addresses and triggers various forms of involvement ranging from active participation to consumption and from slight interest to fan-atic identification. Studies indicate that

identification with clubs, men's teams and male players is one of the main motives for watching football and joining a fan community or a "neo-tribe" in the sense given to the term by Maffesoli (1996; see also Pfister, 2007). The discursive establishment of emblematic in- and out-groups, as well as the overlapping of "tribal" affiliations, provide opportunities for demarcations and multi-layered identification processes, where loyalties to intersecting communities such as clubs, regions or nations are negotiated and displayed. Kreisky and Spitaler (2006, p. 33) describe football communities as fraternities with hierarchic structures, specific rules and rituals, inclusion and exclusion processes, as well as anti-feminist, sexist, and homophobic orientations.

Football is a combat sport, where fighting for possession of the ball and powerful and aggressive actions among players – and also among fans – are appreciated. Marschik (2003) claims that football is staged and perceived as a surrogate war and an arena for acting out men's (the players' and the fans') alliances and conflicts. Players and fans participate in the "serious games" of men, who display masculinities in their fights for hegemony (Bourdieu, 1997). Gender studies also provide insights into masculinity constructions on the football pitch and in the fan stands (e.g. Connell, 2002). They draw attention to the fact that "men's serious games" only make sense when women represent the "other sex", using the terminology of Bourdieu (1997), and act as "flattering mirrors".

Scholars agree that football is a demonstration and celebration of hegemonic masculinity – on and off the field – although the members of the different fan cultures, e.g. ultras or hooligans, may use different scripts for their performances and present different forms of masculinities (see the articles in Kreisky & Spitaler, 2006).

Whether and, if so, how male and female fans react to and identify with female players has not (yet) been an issue of football research, although it must be emphasized that most football studies are gender blind: football scholars describe football and fan cultures as "gender neutral," i.e. without noticing that they deal with a homosocial world of men.

Transnational fandom

Some decades ago sport was an important arena for staging and re-producing national, regional, and local identities. This may still be the case, but football is today a common topic of men in Europe which triggers multiple loyalties and complex identification processes. The rising power of UEFA, the popularity of the Champions League, migrating players and transnational markets are causes and effects of the Europeanization of men's football. Football matches are multicultural events which reach transnational fan communities via old and new communication technologies. The media provide narratives about players, matches, teams, and clubs which gain increasing attention and meaning outside their national or local contexts (e.g. Ranc, 2012).

However, players and teams convey different images in their own country and abroad, and provide different identification patterns for local supporters and for transnational fans who identify with their local clubs and national teams. In addition, a large

number of fans develop an attachment to foreign clubs not because of national/local ties but because of the charisma of players and teams. Today, multiple and intersecting loyalties of fans are the rule and not the exception.

Fans communicate and interact in a virtual multi-national arena and construct virtual "tribes" of Bayern München or Manchester United fans (Maffesoli, 1996). These tribes are transnational as their members live in different countries and environments. They are connected by their love of a specific team. Can football thus be used as material for constructing a European sense of belonging? In addition, the question arises whether and how women can and want to be part of these transnational fan communities.

Female fans in a men's world

Relatively few studies focus on female fans, who are clearly a minority among football audiences. A representative survey of the German population revealed that around 5 % of the female and 21 % of the male population had watched at least one football match in the stadium in the last 12 months. 15 % of the women and 55 % of the men are intensely interested in football (Hansen, 2010; see also Pfister, in press). Studies in other countries indicate similar or even larger gender differences among football supporters and fans (see, for example, the articles in Kreisky & Spitaler, 2006).

Numerous questions are waiting for answers: How do female fans deal with the male fan cultures? Do women play specific roles among fans and behave differently than men? How do female fans react to the sexism and homophobia in football stadiums?[5] Several studies reveal that there are various groups of female fans, as well as diverse motives for and many ways of engaging in fandom. Some women watch the game because they enjoy the company of their husbands or friends; the "groupies" attend a game because they admire an attractive player; and many women are "serious fans" who love the game. The atmosphere in the fan community and the loyalty among fans may be further incentives to watch football for men and women alike. According to Fritzsche (2010) and others, football does not only convey traditional gender ideals and practices but also provides the opportunity to make fun of or even reverse the gender order (Selmer, 2004; Sülzle, 2005; Selmer & Sülzle, 2006; Pope, 2010).

We do not know whether women are fans of foreign players and teams and whether or how they engage in a transnational fan community. Are they "travelling" fans who identify with teams and players in other countries? Do they use websites and the internet to gain information about foreign players and matches abroad? Is football a topic of cross-cultural dialogues among women?

It may be assumed that the answers to these questions depend, among other things, on the football and fan cultures, as well as on the situation of women's football, in various countries. The "feminization" of football (including fandom) may have the best chance of success in countries with a long tradition and strong support of women's football, such as the Scandinavian countries, as well as Germany and France.

[5] See the literature on female fans in Pfister (in press).

Women's football still a contested issue?

As stated above, football was "invented" by men for men, who used the game as a homosocial arena for re-producing masculinity or, as Dunning (1986) phrased it, as an enclave where men could still be men. In some European countries such as England women already began to found football clubs at the beginning of the 20th century, but they had to face the resistance of men and, in particular, of the football associations. In other countries, for example Germany, there were very few (and unsuccessful) attempts by women to play football (Pfister, Fasting, Scraton, & Vázquez, 1998). However, in the 1950s several professional women's football teams emerged in Europe and even competed in international matches organized by businessmen with a view to exploit the voyeurism of male spectators (Pfister, 2011). Despite the increasing quality of the games, professional women's football disappeared when the interest of both the media and audiences waned. In Germany and other European countries football federations completely ignored women's football and even forbade men's football clubs to give female players access to their fields and resources (Hong & Mangan, 2004; Pfister, 2006). Opponents of women's football put forward numerous arguments relating to a dichotomous gender order based on biologist discourses. Female bodies and minds, as well as women's "destiny", were used as arguments to prevent them from participating in an exhausting and rough game which was reserved for men to display their physical and mental superiority. In addition, until quite recently women were considered and treated as the "other sex." Their roles and duties, in particular their responsibilities for home and children, impeded their involvement in numerous activities ranging from politics to employment and, last but not least, to sport.

As stated above, the ban on women's football was lifted in 1970, which marked the beginning of a steadily increasing women's football movement. In 1984, women competed for the first time at the European level in a first European competition; in 1991, the first world championship for women's teams was held; and in 1996, women's football even became an Olympic event. In 2000/2001, a UEFA Women's Cup was introduced which responded to the growing interest in and importance of women's football in Europe. In 2009/2010, this event was re-branded as the UEFA Women's Champions League.

Today, girls and women play football in all European countries; however, percentages vary depending on the country. Among all members of football clubs, girls and women represent 22 % in Norway, 21 % in Denmark, 15 % in Germany, 5 % in England and France, 2 % in Italy and 1 % in Greece (Pfister, 2011a). In many countries, for example in Norway and the UK, football is among the most popular women's sports (Pfister, 2011).

Currently, women are increasingly accepted and even appreciated by national football federations and also by the UEFA, which finances studies on women's football and supports women's games at the European level. The reason for this interest may be self-serving, among other things aiming at an increase in members and fans. But this does not matter: the federations' support has contributed to the rise of a European

women's football movement which includes – besides players and fans – journalists and administrators, as well as scholars conducting research on women's football. However, women's football is still the "other" game.

Jeanes and Kay (2007, p. 109) claim that "femininity in football continues to be constructed as subordinated, stigmatized and marginalized /…/ Research offers compelling evidence of the power of football to retain its masculine status." Female players seem to challenge notions of male hegemony, but as Harris (2005, p. 1) states, "their acceptance of the male game as being more important, and their adopting of discourse and ideologies emanating from the male model of the sport, means that they are also colluding in the (re)production of masculine hegemony" (Harris, 2005, p. 1).

As stated above, migrating players may contribute to the globalization of the game. Research in labor migration of athletes which has emerged in recent decades focuses almost entirely on men, mostly male football players. According to current studies, among others the studies conducted in Scandinavia, female players, too, travel to foreign countries and find jobs in clubs; but their salaries are low, and only very few players are offered a long-term perspective. The "migrants" come with various motives, among others to get better training and living conditions. In particular, clubs in Scandinavia and Germany are transnational organizations with international women's football teams (see, for example, Botelho & Agergaard, 2011). Nevertheless, it is an open question whether the foreign players and the multi-national teams contribute to an international or even European identification of the spectators.6 The lack of interest in female players and teams may restrict the impact of women's football internationalization.

Women's teams and their fans

As it has been pointed out above, women are still the "second sex" in football – not only with regard to spectators, public attention and media coverage but also with regard to sponsors and financial resources (Pfister, 2006). With few exceptions, female teams attract only small numbers of spectators. In Germany, the average number of fans attending a women`s game is less than 1,000. Even female football stars do not earn enough to make a living. Observations during the last women's world championship showed that although there was considerable media interest in the games, football was also accompanied by gendering and sexualization processes. Journalists even discussed whether women's football could be considered "real" football. The defeat of the German team in the 2011 World Championship had a negative impact on public attention and enthusiasm in Germany. This impeded the development of women's football in one of the most important "football countries."

The question arises as to whether – and when – women's clubs and female players attract fans from abroad, become an issue in European football discourses, and provoke transnational identification processes. This is still to be explored.

CONCLUSIONS AND PERSPECTIVES

Currently, men's football seems to be one of the few activities that addresses and attracts transnational communities. Football grounds and football matches can be interpreted as activities and spaces which have an impact on perceptions, experiences, embodiments, and identities of various populations in Europe and beyond. Football may contribute to European integration based on cross-cultural interests and dialogues. The question arises as to whether – and how – women, both female players and female fans, participate in these transnational communication and identification processes.

To answer these questions we must explore the role of women's football in European football discourses, investigate the potential of women's games and female players to attract female and male fans and trigger transnational communication. In addition, we need to ask to what degree and in which way migrating players, both men and women, can contribute to these integration processes as ambassadors of their respective countries.

A major area of the research will be the relatively unexplored field of female fans. What are their backgrounds, motives, and behavior patterns, as well as their roles in fan cultures dominated by men? How do female fans adapt to and/or resist men's supremacy? How do they use fandom for their gender projects and how do they position themselves in the European football scene? Female fans of women's teams will be an important issue since it can be assumed that identification with players of the same gender provides specific opportunities to enjoy football and participate in the creation of transnational football spaces.

It may be assumed that the increasing number of women among football crowds and their consumption of football as mass entertainment have an impact on gender constructions, relations, and negotiations on and off the football ground. This also raises questions not only about men's and women's patterns of identification and emotional investment, but also about the impact of women engaged in football on the existing gender order. A comparative analysis of football cultures will provide an insight into the involvement of women and show similarities and differences in various countries. The FREE project and its research groups will explore these questions by conducting surveys and interviews in seven countries.

A special focus will be placed on general populations in the participating countries and their interest in and attachment to football – not only to "their own" but also to foreign clubs, teams and players. Do they, i.e. both the men and the women, take part in the European football discourses and do these discourses trigger "Europeanization" processes.

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SHOOTING PERFORMANCE DID NOT CHANGE IN ELITE WOMEN'S NATIONAL BASKETBALL TEAMS FROM 1995 TO 2011

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ABSTRACT

Performance indices, i.e. model characteristics, quantitative and qualitative indices of a shot made at the basketball match, are a part of the system of criteria that allow one to objectively determine and evaluate the readiness of basketball teams and the quality of their performance. The aim of this research was to identify and evaluate changes in the key quantitative and qualitative indicators of shooting for the best European women's basketball national teams between 1995 and 2011. The data from official statistical documents for the 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2009 and 2013 European women's basketball championships were collected and statistical analyses (mean, standard deviation) of 608 cases were used. It was ascertained that the number of scores in one match of the European championship of the eight best women's basketball teams decreased from 69 to 65 points. The number of shots from close and middle distances dropped sharply − from 51 to 43 points in a match, however, their accuracy remained similar − between 42 and 43 %. The number of long-distance shots increased dramatically, from 9 to 16 points in a match, their accuracy had a tendency to increase from 29 to 33 %. The number of free throws decreased significantly − from 26 to 17 points in a match, but their accuracy remained similar − between 71 and72 %.

Keywords: *basketball, competitive activities, model characteristics, shooting performance.*

USPEŠNOST META NA KOŠ SE MED LETOMA 1995 IN 2011 PRI NAJBOLJŠIH ŽENSKIH KOŠARKARSKIH EKIPAH NI SPREMENILA

IZVLEČEK

Del sistema meril, s katerimi lahko objektivno ugotovimo in ovrednotimo pripravljenost košarkarskih ekip in kakovost njihove igre, je kazalec uspešnosti, tj. vzorčnih značilnosti kvantitativnih in kvalitativnih kazalcev meta na koš. Cilj te raziskave je bil ugotoviti in ovrednotiti spremembe v ključnih kvantitativnih in kvalitativnih kazalcih meta na koš pri najboljših evropskih ženskih košarkarskih reprezentancah med letoma 1995 in 2011. Upoštevali smo podatke iz uradnih statističnih dokumentov evropskih ženskih prvenstev v košarki iz let 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2009 in 2013 ter uporabili statistične analize (pričakovana vrednost, standardni odklon) na 608-ih primerih. Ugotovili smo, da se je število doseženih točk v eni tekmi evropskega prvenstva pri osmih najboljših ženskih košarkarskih ekipah zmanjšalo z 69 na 65 točk. Število metov od blizu in s srednje razdalje je močno padlo, in sicer z 51 na 43 točk na tekmo, vendar je natančnost metov ostala približno enaka kot prej, kar je med 42 in 43 %. Število metov z dolge razdalje se je dramatično povečalo, in sicer z 9 na 16 točk na tekmo, tudi njihova natančnost je naraščala, z 29 na 33 %. Število prostih metov se je bistveno zmanjšalo, s 26 na 17 točk na tekmo, njihova natančnost pa je ostala podobna, kar je med 71 in 72 %.

Ključne besede: *košarka, tekmovalne aktivnosti, vzorčne značilnosti, uspešnost meta na koš*

INTRODUCTION

Contest performance indicators analysis of the best European basketball teams provides a lot of objective information about the game of basketball, its development and the achieved results. A number of authors (Hughes & Bartlett, 2002; O'Donoghue, 2010) consider the studies in the indicators of contest activities (games) and the changes in the features of key competitions to be one of the most important areas of sports science research. An integral criterion of the effectiveness of team game is the optimal performance achieved in key competitions (Choi et al., 2006). Fitness of players and the team, the quality of the game, which allows achieving good integral development and targeted management of physical training processes, can only be identified and evaluated through the system of objective criteria (Kreivytė & Čižauskas, 2007). A part of the criteria system consists of the indicators of contest activities (games) of highly skilled basketball teams − the model characteristics that condition the victory in the matches and contests between equal opponents (Dezman et al., 2002; Trninić et al.,

2002; Reano et al., 2006), moreover, the knowledge of the contest activities determinants allows the coaches to prepare more accurate schemes for matches and devise the best tactics to win the game (Csataljay et al., 2009).

The team game and its changes can be evaluated by analysing quantitative (shooting from different distances, free throws, rebounds, etc.) and qualitative (shooting efficiency, diversity, etc.) indicators. One of the most important technical actions of players is shooting. These are complex attack closing actions that depend on many factors: the angle and the distance of shooting, the place on the court for a shot, defensive actions, and the structure of an attack (Čižauskas & Kreivytė, 2004). The number of shots from close and medium distance is decreasing due to the increasing variety of offensive tactics and better opportunities to shoot accurately into the basket from long distances (Mendes & Janeira, 2001). Oliver (2004) identifies four key factors in pursuing victory. Two of them are related to shooting, i.e. the accuracy of shooting and the number of free throws (the other two factors are offensive rebounds and the number of turnovers).

There is much research concerning issues about men's basketball teams (Dezman et al., 2002; Tsamourtzis et al., 2002; Trninić et al., 2002; Ibáñez et al, 2003; Choi et al., 2006; Sampaio et al., 2010). Studies about women's teams (Čižauskas & Kreivytė, 2004; Kreivytė & Čižauskas, 2007), their contest performance indicators in comparison with the indicators for men's teams (Sampaio et al., 2004; Reano et al., 2006) are not numerous. Other important research on competitive activities analyses the characteristics of players playing in different positions (Sampaio et al., 2006a, 2008), differences in the actions of starters and non-starters (Sampaio et al., 2006b; Gómez et al., 2009), or differences in the indicators of winning and losing teams in close game situations and play-offs (Jukić et al., 2000; Csataljay et al., 2009, 2012; Kreivytė & Čižauskas, 2010). There is lack of research on the best European women's basketball teams, comparative analysis of the key long-term quantitative and qualitative indicators in competitions that would allow preparing model characteristics for the team games. Therefore, we raised the following research question: what are the main trends of changes in the key components of the game − quantitative, qualitative and model indicators of shooting the ball for a team?

The primary aim of this research was to determine the changes in the key quantitative and qualitative indicators of shooting for the best European women's basketball national teams in the period between 1995 and 2011, while the secondary aim was to compare the best team on the championship (positioned on 1st place) with the rest of the teams.

METHODS

Archival statistics of nine European women's basketball championships (from 1995 to 2011, n = 9 championships, www.fibaeurope.com) were processed. Eight best teams (1st to 8th place winners) were studied. The winner of the European championship was compared to the other eight teams ranked from second to ninth place. All in all, statisti-

cal protocols of 608 matches in the European championships which were held in 1995, 2007, 2009, 2011 (72 protocols of each match) and in 1997, 1999, 2001, 2003, 2005 (64 protocols of each match) were analysed. The analysis included the recorded number of shots scored in the game, numbers of throws (two-pointers, three-pointers and free throws) and their accuracy (%). The throws were defined according to distance, as follows: a short distance throw was a free throw; a middle distance throw was a two-pointer; and a long distance throw was a three-pointer.

Statistical analyses

The Statistical Package for Social Sciences SPSS (v18.0, SPSS Inc., Chicago, IL) was used for the statistical analysis. Descriptive statistics were calculated for all experimental data. Kolmogorov-Smirnov test was used to test if data were normally distributed. Differences between the European champion team and the eight best teams were calculated using a three-way analysis of variance-ANOVA (time x throws x team). The statistical significance was set at $p < 0.05$.

RESULTS

Figure 1 shows average indices, as well as the changes in the scored points of the European champions and the eight best teams in European championships. No significant difference was observed ($p > 0.05$) between the European champions and the eight best teams in the number of points scored in the game in the European Championship from 1995 to 2001. Statistically significant difference in the scored points was established between the European champions and the eight best teams in the 2001 European Championship: the champions scored 78.3 ± 8.1 points on average per game, and the average team score was 69.9 ± 5.6 points ($p < 0.05$) (Figure 1). In the European Championships of 2003 and 2009, women's teams scored more points on average than the team that won in the Championship, but the difference of this index between the teams was not statistically significant ($p > 0.05$).

European best women's basketball teams won the maximum points in a match in 2003 Championship, averaging 73.9 ± 4.6 points, and the European champions won most points during 2001 Championship match, i.e. 78.3 ± 8.1 points. The fewest points were scored by the teams in the 2009 Championship, averaging 64.6 ± 8.8 points. This index was also the worst for the champion team as they scored only 63.1 ± 8.9 points.

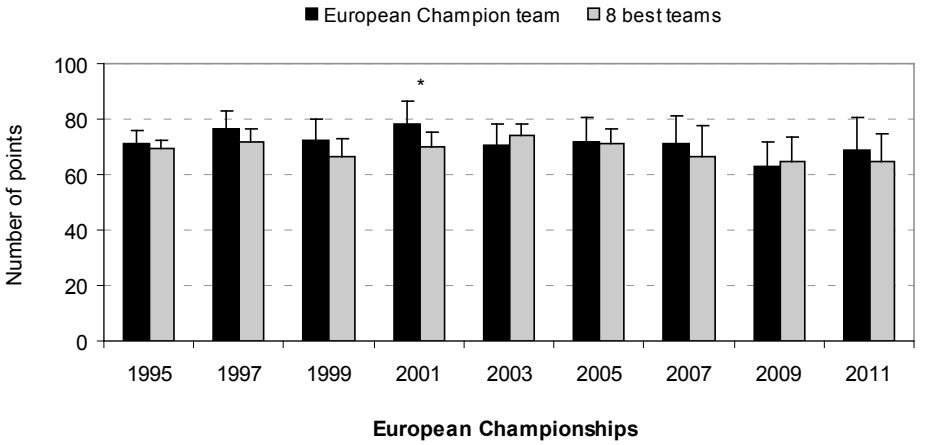

Figure 1: The number of scores for women's basketball teams in the European Championship matches (average per one game).

*Note: * - $p < 0.05$, comparing the average indices of the champion team and the best 8 teams.*

Figure 2 shows changes in the average indices (number and accuracy of throws) for women's basketball teams. Most of the close-range and mid-range shots were performed by the teams in 1995 European Championship matches, an average of 50.8 ± 4.1 shots. European champion team usually made close-range shots in 2005 Championship matches, an average of 52.9 ± 6.5 shots. The team performed the fewest two-pointers in the 2009 European Championship matches, an average of 41.7 ± 7.6 shots. European champion team performed the fewest close-range and mid-range shots in the 2003 and 2009 Championship matches, respectively, 41.4 ± 6.9 and 41.3 ± 3.6 shots. Comparing the differences of the average performance indices of eight best teams and the champions we see that only in the 1997, 2001, 2005, 2007 and 2011 Championships the champion team made more close and mid-range shots than the other teams, but statistically significant differences were established only in the 2007 Championship ($p < 0.05$).

The accuracy of two-pointers was the best in the 1997 Championship matches, the average accuracy of team throws was 48.9 ± 2.1 %, and the champions most accurately attacked in close positions in the championship of 1999, the average accuracy of the throws at that time was 52.9 ± 5.5 %. The accuracy of close and mid-range shots was the worst in the 1995 Championship games, the average rate of team accuracy being 41.9 ± 2.3 %, and the champions worst attacked the basket from a close position in the 2005 Championship games, averaging 42.9 ± 6.4 %. In all championships, with the exception of the one in 2005, the accuracy of champion's close-range shots was better

than the average value of the eight best teams. A significant difference between the teams indices was established only in the Championship of 1999 ($p < 0.05$) (Figure 2).

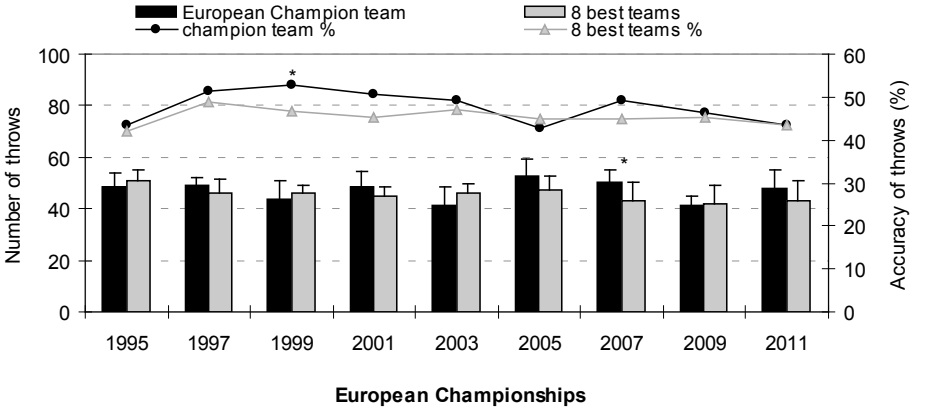

Figure 2: The number and accuracy of close and mid-range shots for women's basketball teams in the European Championship matches (average per one game).

*Note: * - $p < 0.05$, comparing the average indices of the champion team and the best 8 teams.*

Figure 3 shows the changes in the indicators of long-range and mid-range shots (number of throws and accuracy) for women's basketball teams. Most of the long-range shots were made by teams in the 2009 European Championship matches, an average of 17.4 ± 4.6 shots. The fewest two-pointers were made by teams in the 1999 European Championship matches, an average of 8.2 ± 1.1 shots. The European champion team made the fewest shots from distant range in the 1997 Championship matches, an average of 8.0 ± 2.5 shots. Comparing the differences in the average indices of performance of the best eight teams and the champions, we see that only in two championships (in 1995 and 1999) the champion team made more long-range shots than other teams, but the statistically significant difference in those indices was established only in the 2007 and 2009 Championships ($p < 0.05$).

The accuracy of three-point throws was the best in the 2005 Championship, the average accuracy of team throws was 34.4 ± 5.9 %, and the champions most accurately attacked from far in the 2011 Championship, the average accuracy of the throws was 42.7 ± 12.9 %. The accuracy of long distance shots was the worst in the 1995 Championship games, the average rate of team accuracy was 29.2 ± 8.7 %, and the champions' worst long distance attack was in the 1997 Championship games, 17.0 ± 11.9 % on average. The accuracy of champions' three-pointers was better than the average index of eight best teams only in the 1995, 2001, 2005 and 2011 Championships. A statistically significant difference between the teams was established only in the 1997 and 2011 Championship ($p < 0.05$) (Figure 3).

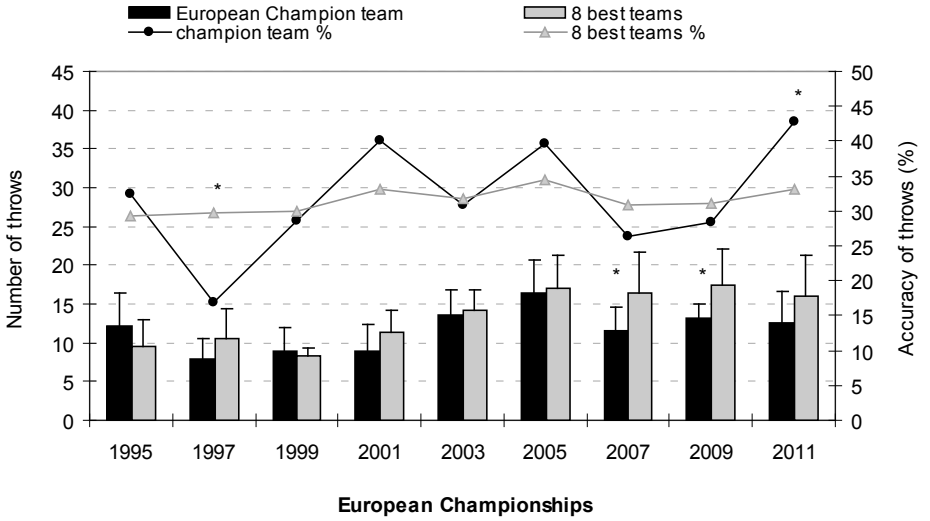

Figure 3: The number and accuracy of long-range shots for women's basketball teams in the European Championship matches (average per one game).

*Note: * - $p < 0.05$, comparing the average indices of the champion team and the best 8 teams.*

Figure 4 shows the changes in the average indices of free throws for women's basketball teams (number and accuracy of throws). Most free throws were made in the 1995 European Championship matches, an average of 26.0 ± 2.8 throws. European champion team made most free throws in the 1997 Championship, an average of 28.3 ± 8.1 throws. The teams and the champions made the fewest free throws in the 2005 European Championship matches, 15.7 ± 3.0 and 10.9 ± 5.2 throws respectively. Comparing the differences of average performance indices of eight best teams and champions, in all the championships, with the exception of 2005, the champion team made more free throws than the other team. A significant difference between teams was established in the 2005 championship ($p < 0.05$).

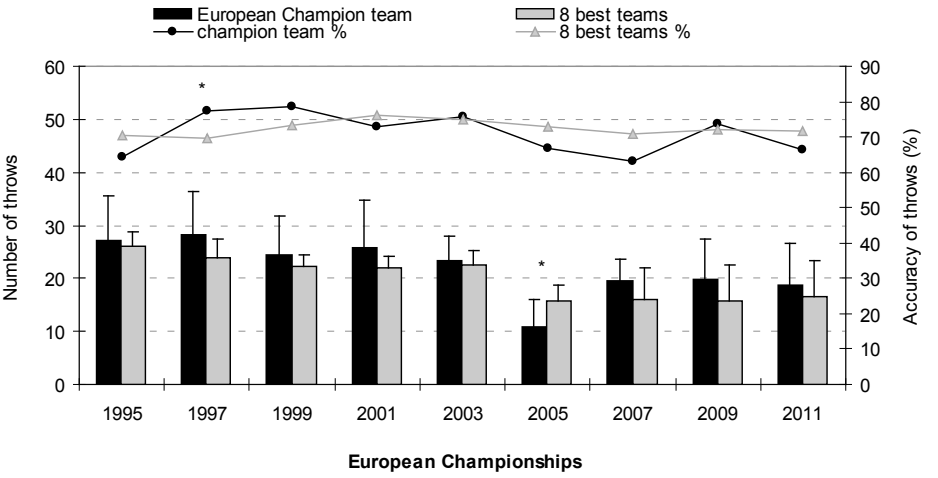

Figure 4: The number and accuracy of free throws for women's basketball teams in the European Championship matches (average per one game).

*Note: * - p < 0.05, comparing the average indices of the champion team and the best 8 teams.*

Free throw accuracy was the best in the 2001 Championship, the average accuracy of team free throws was 76.2 ± 6.9 %, and the champions performed most accurate free throws in the 1999 Championship, the average accuracy of the throws was 78.4 ± 6.2 %. Free throw accuracy was the worst in the 1997 Championship, the average accuracy rate of teams was 69.7 ± 7.3 %, and the champions' worst attack of the basket from the free-throw line was in the 2007 Championship matches, 63.3 ± 11.8 % on average. The accuracy of free throws in the champion team was better than the average index of eight best teams only in the 1997 and 1999 Championships. Significant differences between teams were established only in the 1997 and 2005 Championships ($p < 0.05$) (Figure 4).

DISCUSSION

The aim of our research was to investigate the changes in the shooting indices (number and accuracy) of eight best women's basketball teams in the European championships (between 1995 and 2011). The analysis of the long-term performance indicators of the best European women's basketball teams highlights their variability. There was an obvious decline in the scored points since the 2003 European Championship, i. e. the number of points scored in the game dropped from 74 (in 2003) to 65 points (in 2009, 2011). One of the indicators that describe the nature of offence in basketball teams and the effectiveness of a game is the number of points scored. Of course, it depends on

objective factors: the opponents' style of play, the number of very capable players in the team, team tactics in a game, etc. (Reano et al., 2006). The causes of decline in performance could be stabilization of offensive and defensive tactics, more equal capacity of rivals, changes in rules (Tsamourtzis et al., 2002). The decrease in scored points could also be the result of fewer short-distance and medium-distance shots per game, intensified defence and, therefore, the increased number of turnovers per game.

In general, basketball performance depends offensively on shooting field goals (Trinić et al., 2002; Sampaio et al., 2004; 2006a, 2006b, 2010). In the game of elite women's teams, the end of the game is usually determined by the accuracy of shots, especially the shots from close and mid-range distances (which make up the majority of all the shots) (Kreivytė & Čižauskas, 2007, 2010). In the best eight teams, the best average shot from close and mid-range distances in one match was 51 (1995). The decrease in the number of such shots (by 8 to 10 shots) was observed in the latest European championships (2007, 2009, and 2011). The causes of the decrease in the number of shots could be either active defence in the penalty area or an increased number of long-range shots. Most authors claim in their works that the accuracy of two pointers can often determine the finish of the game (Mendes & Janeira, 2001; Dezman et al., 2002; Gómez et al., 2006, 2009). The number and the accuracy of successful shots from close and mid-range distances is the indicator reflecting offensive performance which shows that better teams are tactically disciplined with clear targets. Oliver (2004) argues that the basketball teams with slower game pace demonstrate better accuracy of shots from close and mid-range distances. The author explains the fact that while preparing for the game and competition, the team coaches increasingly focus on the improvement of shots and ball control. Our investigated accuracy of two pointers in the European championships teams changed insignificantly (the best shot accuracy was 48.9 %, and the worst shot accuracy was 42.9 %). The best accuracy of two pointers was reached by the champions of 1999, whose accuracy of throws was 52.9 %.

An increase in the number of long-range shots has been observed since the 2001 European championship. The number of long-range shots of eight best women's basketball teams in the 1995 championship was 9, and in the last European Championship (2011) the teams performed 16 long-range shots in a match. The European champions do not overindulge in these shots; only in two championships (1995 and 1999) they performed more long distance shots than other teams. Kreivytė & Čižauskas (2010) studied the differences of the performance indices between winning and losing teams in the 2009 European Women's Basketball Championship games and found that the losing team often rescues its performance with long distance shots at the end of the game, but when the game is point to point, the winning team makes fewer long distance shots, but their accuracy is better. Similar results were obtained by other authors (Csataljay et al., 2009, 2012) who investigated men's basketball teams. The accuracy of long-range shots from 1995 to 2011 European championships remained similar; it differed by only 4 %.

The number of free throws in the game shows the activity of a team in organizing and completing the attacks when the opponent applies active defence systems (Oliver,

2004). Free throw accuracy is exceptionally affected by the result of the match and the associated mental status of the basketball player performing a throw (Vickers, 2007). In 1995, the best women's basketball championship teams were very active in offence and stood at the free-throw line 26 times per game. High activity while finishing the attacks and the stability of the accuracy of free throws were demonstrated by the European Champion of 1997: in one championship match, the average of 28 free throws was made, and 22 of them were accurate (79 % accuracy), which accounted for 29 % of the total points in the game (Čižauskas & Kreivytė, 2004). Many authors (Trninić et al., 2002; Gómez et al., 2006; Csataljay et al., 2009, 2012) studied men's basketball teams and found that teams winning the matches made significantly more free throws than the losing teams.

Since the 2005 European Championship, a noticeable decrease in the number of free throws was observed. In this championship, the teams made only 16 free throws, and the European champion made even fewer, 11 free throws. A similar result was shown by the teams in the last European Championship in 2011 (fewer than 17 shots in a match). In all championships, European champions made more free throws than other teams except for one championship (in 1995). In closely contested games, free-throws have been reported to be important for the game outcome (Jukić et al., 2000; Gómez et al., 2006). It has been established that the mean accuracy of free throws of the world basketball players (both men and women) per match is 76 %. The 65 % accuracy of throws is considered to be poor, as the accuracy of the best basketball players usually reaches 90 % or more in a game (Vickers, 2007). The accuracy of free throws in our investigated teams matched the average assessment of the world's best teams (76 %) only in the 2001 European Championship. In other championships the accuracy of free throws was similar and altered for about 5 %.

CONCLUSIONS

Model characteristics of women's basketball teams shooting and their changes: the number of scored points in one match decreased from 69 to 65 points; the number of shots from close and middle distances dropped sharply − from 51 to 43 points in a match; however, their accuracy remained similar − 42 – 43 %; the number of long-distance shots increased dramatically − from 9 to 16 points in a match, their accuracy had a tendency to increase from 29 to 33%; the number of free throws decreased significantly − from 26 to 17 points in a match and their accuracy remained similar − 71 to 72 %.

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ATTITUDES TOWARDS EXERCISE AND THE PHYSICAL EXERCISE HABITS OF UNIVERSITY OF ZAGREB STUDENTS

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ABSTRACT

The aims of this research were to determine the importance that university students give physical activity, to distinguish those sport activities that university students prefer and would want to be involved in, and to determine the differences in attitude towards individual sports activities in regard to gender. The study was conducted using a sample of 190 (age 18 ± 1 year) randomly selected university students (108 females; 82 males) that are currently attending the first and second year of architecture and geodesy and who also attend physical education classes. The results showed that university students were very well informed about the importance of physical exercise and recreation. Nevertheless, when it came to their involvement in various sporting activities, the questionnaires showed that almost 57 % of the university students do not generally spend their time participating in any sports and recreational activities. On the other hand, statistically significant differences ($p < 0.00$) were found between men and women in terms of selection and participation in sport activities based on the completed questionnaire. Based on the obtained data, the university students were offered sport events consistent with sports trends, following the wishes and interests of specific groups with regard to gender.

Key words: *sport participation, gender, sport events, student's PA*

ODNOSI DO TELOVADBE IN NAVADE GLEDE TELESNIH DEJAVNOSTI ŠTUDENTOV UNIVERZE V ZAGREBU

IZVLEČEK

Cilji raziskave so bili ugotoviti, kakšen pomen študentje dajejo telesnim aktivnostim, razločiti, katere športne aktivnosti so študentom ljubše in v katere bi želeli biti vključeni, ter ugotoviti razlike v odnosu do posameznih športnih aktivnosti glede na spol. Študija je bila izvedena na vzorcu 190-ih (starost 18 ± 1 leto) naključno izbranih študentov (108 žensk, 82 moških), ki trenutno obiskujejo prvi in drugi letnik arhitekture in geodezije in ki hodijo tudi na telovadbo. Rezultati so pokazali, da so bili študentje zelo dobro obveščeni o pomenu telesne dejavnosti in rekreacije. Kljub temu pa je raziskava pokazala, da se v praksi skoraj 57 % študentov ne udeležuje nobenih športnih in rekreativnih dejavnosti. Po drugi strani pa je raziskava na podlagi izpolnjenih vprašalnikov pokazala tudi statistično pomembne razlike ($p < 0,00$) med moškimi in ženskami glede izbire in sodelovanja v športnih dejavnostih Na osnovi pridobljenih podatkov so študentom ponudili športne prireditve v skladu s trendi v športnih aktivnostih, ki jih oblikujejo želje in interesi določenih skupin glede na spol.

Ključne besede: *udeležba v športu, spol, športni dogodki, telovadba za študente*

INTRODUCTION

Health is a dynamic process that is constantly changing throughout life. Modern society is characterized by a lack of physical activity. Due to our advanced technology, people spend less and less time doing physical work as they are slowly being replaced by machines. This lack of physical activity also has a significant impact on the general human health status (Mišigoj-Duraković et al., 1999). Many experts and the World Health Organisation recommend regular, daily exercise to compensate for the reduction in physical work with the aim to preserve and improve both psychological and physical abilities. Life-long habits learnt in childhood are often reflected in one's health status during adulthood, commonly appearing as the initial risk factors of many diseases (Tirodimos, Georgouvie, Savvala, Karanika, & Noukari, 2009). It is therefore important to promptly begin tracking the habits and health statuses of such people. In recent years, the number of research studies (Carlson, 1995; Portman, 1995; Ennis, 1996; Koca, Asci, & Demirhan, 2005) regarding university students' attitudes towards physical education and a health-promoting lifestyle is constantly growing. University students make up a large portion of the youth population who are, admittedly, still susceptible to changes in the case of environmental influence.

Tirodimos, Georgouvie, Savvala, Karanika and Noukari (2009) have indicated that university students are in the last stages in which they can develop healthy behaviors and good eating habits. Physical exercise programs for university students should be

designed to fulfill their leisure time, thus giving them the opportunity to develop a positive attitude toward physical exercise. This can contribute to the promotion and adoption of healthy lifestyles (Huddleston, Mertersdorf, & Araki, 2002). Unfortunately, the sedentary way of life has become predominant between university students as well (Gošnik, Bunjevac, Sedar, Prot, & Bosnar, 2002), so the minimum recommended physical activity affecting the health status could not be met even among students of medical science (Teczely, Tolnai, & Angyan, 2003). Instead of being primarily related to the promotion of a healthy and active lifestyle, in some American universities, physical activity has been given "a highly commercial, professional connotation" (American Association of University Professors, 2003).

Tirodimos et al. (2009) found, in their study, that female university students exercise less than their male peers, but have a lower risk of obesity due to healthier nutrition. According to a study conducted at the Faculty of Agriculture (Caput-Jogunica & Čurković, 2007), 74 % of university students were not involved in any form of physical activity, while 20 % were involved recreationally (2 to 3 times a week). Only 0.6 % were involved in active exercise. Hasse, Steptoe, Sallis and Wardle (2004) compared the involvement in physical activities during leisure time among university students of 23 countries and found that there was a significant difference in terms of gender, where men were much more involved than females (28 % versus 19 %). Furthermore, the habits acquired during the period of mandatory physical education in school have a significant impact on the subsequent lifestyle and active participation in exercise of any kind should not be underestimated. Some research (Adams & Brynteson, 1992; Brynteson & Adams, 1993) showed that the high demands of the university lifestyle, in terms of regular participation in sporting events, had resulted in positive exercise habits lasting between 2 and 11 years after graduation.

One of the possible effective interventions to include a greater number of university students in exercise programs with a probable effectuation of a healthy lifestyle, besides promotion and motivation, is the introduction of new sporting activities. Cardinal, Jacques, and Levy (2002) have confirmed that university students easily accept new sporting activities included in the program. Along with the current technological development, new, modern sports and physical recreation activities have emerged that are more interesting to users since they can immediately see the effects of their training through an improved level of fitness and health status. This kind of feedback facilitates the development of a person's positive attitude towards physical activity, while also helping him/her to find their optimal physical activity.

At the university level, the importance of curricular courses, in terms of health and exercise, has been well documented, although the impact of such courses on university students' knowledge, skills, attitudes and habits remains unclear (Friesen & Hoerr, 1990; Sallis et al., 1999; Furber & Ritchie, 2000; Cardinal et al., 2002). The primary aim of this study was to identify the attitudes of university students towards physical exercise and their habits. The secondary aim was to identify sports preferences among undergraduate university students and to determine gender differences visible through these preferences.

METHODS

Subjects

The study was conducted in the 2009/2010 academic year during the winter semester. The sample included 190 randomly selected university students (age: 18 ± 1 years), freshmen and sophomores from the Faculty of Architecture and Faculty of Geodesy at the University of Zagreb, who attended their mandatory Physical Education classes. Out of the total number of participants, there were 108 females (35 first-year and 39 second-year university students of the Faculty of Architecture and 18 first-year and 16 second-year university students of the Faculty of Geodesy). There were 82 male university students, of which 18 were freshmen and 11 were sophomores of the Faculty of Architecture with 30 freshmen and 23 sophomores from the Faculty of Geodesy.

Participation in the research was voluntary and the participants could back out in any time. The protocol of the research was approved by the Ethical Committee of the Faculty of Kinesiology, University of Zagreb, according to the revised Declaration of Helsinki. All the participants received detailed instructions for filling out the anonymous questionnaires and the advantages of the research were explained to them.

Table 1: The importance of physical activity for architecture and geodesy university students.

Importance of PA	Number of university students	%	Cumulative
1	1	1	1
2	4	2	3
3	59	31	34
4	96	51	85
5	28	15	99

Note ("Importance of PA" column): 1 – Sport I would never, under any circumstances do; 2 – Sport I would do if there was no other option; 3 – Sport I am not sure I would like to do; 4 – Sport I would like to do; 5 – Sport I would prefer most to do; PA – physical activity

Procedure

To determine university students' attitudes towards teaching physical education (PE), we used a questionnaire which was valid for this study design and had been previously used (Haralambos & Holborn, 2002). The survey was conducted among the university students as a part of their regular PE classes during the second semester (Haralambos & Holborn, 2002). The questionnaire included 21 questions, each of them related to one type of sport. The participants were asked to indicate on a 5-point Likert

scale the extent to which they would like to be involved in each sport (1 – Sport I would never, under any circumstances do; 2 – Sport I would do if there was no other option; 3 – Sport I am not sure I would like to do; 4 – Sport I would like to do; 5 – Sport I would prefer most to do).

Statistical analyses

The data were processed by Statistica 6.0 for Windows. Descriptive statistics (frequencies, means and percentages) were used to show the obtained results. Gender differences were determined by *t*-test at the univariate level, and with the canonical discriminant analysis at the multivariate level. Statistical significance level was set at $p < 0.05$.

Table 2: The frequency of physical activity per week.

Frequency of PA practice per week	Number of university students	%	Cumulative
0	109	57	57
1	4	2	59
2	35	19	78
3	24	13	91
4	7	4	95
5	3	2	97
6	8	4	100

Note: PA – physical activity

Table 3: Female students orientations regarding the specific sport.

Variable	1	2	3	4	5
Running/walking/trekking (%)	28	26	26	12	8
Fitness drills/aerobics (%)	23	12	16	29	18
Gymnastics (%)	31	22	22	14	11
Sailing/windsurfing (%)	25	19	23	18	13
Handball (%)	25	28	23	14	9
Wrestling/judo/karate/boxing (%)	38	22	16	12	12
Soccer (%)	36	18	11	15	19
Volleyball (%)	20	19	19	24	17
Basketball (%)	21	25	20	19	13
Rugby (%)	57	19	9	9	5
Track-and-field (%)	40	19	21	12	7
Roller sports (%)	26	17	15	18	23
Swimming (%)	8	8	21	26	36
Bowling (%)	48	20	17	9	4
Diving (%)	22	11	17	22	26
Shooting/paintball (%)	17	9	23	23	28
Chess (%)	43	18	17	11	10
Tennis/table tennis (%)	14	16	25	24	20
Water polo (%)	35	23	22	13	5
Rowing/kayaking (%)	30	21	26	14	7
Dance (%)	20	13	15	20	31

Note: 1 – Sport I would never, under any circumstances do; 2 – Sport I would do if there was no other option; 3 – Sport I am not sure I would like to do; 4 – Sport I would like to do; 5 – Sport I would prefer most to do

RESULTS

The results shown in Table 1 indicate that university students are generally well informed about the importance of physical activity. In fact, only one university student out of 190 participants answered that physical activity is not important. Four university students (2 %) responded that they did not give much importance to physical activity, and 59 (31 %) university students believed that exercise was a matter of secondary importance. Out of all the university students included in the survey, 96 (51 %) considered exercise extremely important and 28 university students (15 %) could not live without daily physical activity.

Table 2 shows that 57 % of university students were not involved in any form of physical exercise outside school PE classes. Only 2 % of the university students were involved in some form of extracurricular physical activities once a week, while 40 % of them occasionally exercise 2 to 5 times a week. Only 4 % of the university students exercise every day.

Table 4: Male student orientations regarding the specific sport.

Variable	1	2	3	4	5
Running/walking/trekking (%)	18	20	23	21	15
Fitness drills/aerobics (%)	45	20	15	13	4
Gymnastics (%)	51	20	13	7	5
Sailing/windsurfing (%)	26	18	31	12	10
Handball (%)	21	28	24	15	11
Wrestling/judo/karate/boxing (%)	27	27	16	11	17
Soccer (%)	16	7	15	24	38
Volleyball (%)	22	21	20	24	12
Basketball (%)	13	26	15	32	11
Rugby (%)	39	22	15	13	7
Track-and-field (%)	31	17	22	17	10
Roller sports (%)	48	23	15	7	4
Swimming (%)	10	12	21	27	27
Bowling (%)	40	21	18	11	6
Diving (%)	27	9	21	20	21
Shooting/paintball (%)	16	9	20	18	35
Chess (%)	33	21	21	10	12
Tennis/table tennis (%)	13	12	27	29	17
Water polo (%)	23	24	28	15	6
Rowing/kayaking (%)	23	12	37	17	7
Dance (%)	45	20	15	9	9

Note: 1 – Sport I would never, under any circumstances do; 2 – Sport I would do if there was no other option; 3 – Sport I am not sure I would like to do; 4 – Sport I would like to do; 5 – Sport I would prefer most to do

It was found (Table 3) that most university students wanted to be involved in swimming (62 %). Also, dance (51 %), shooting/paintball (51 %), diving (48 %) and fitness drills/aerobics (47 %) were the activities that university students would mostly like to perform.

An interesting fact is, that gymnastics and roller sports had a negative rating among 71 % of the university students (Table 4). On the list of unpopular activities among the university students are also the following: fitness drills/aerobics and dance (65 %), rugby and bowling (61 %), and to a lesser extent wrestling/judo/karate/boxing and chess (54 %), and volleyball (49 %). On the other hand, soccer (62 %) was the most popular sport among the male university students. A high interest was recorded also for swimming (54 %), shooting /paintball (53 %), table tennis/tennis (46 %) and basketball (44 %).

Table 5: Percentages of student orientations regarding the specific sport.

Variable	1	2	3	4	5
Running/walking/climbing (%)	14	25	22	24	15
Fitness/aerobic (%)	6	6	18	41	29
Gymnastics (%)	16	23	28	18	15
Sailing/windsurfing (%)	24	20	18	22	16
Handball (%)	29	29	22	13	7
Wrestling/judo/karate/boxing (%)	46	18	16	13	7
Soccer (%)	51	27	8	8	6
Volleyball (%)	19	18	19	24	20
Basketball (%)	27	25	24	10	14
Rugby (%)	70	17	5	5	3
Track and field (%)	46	20	20	8	6
Roller sports (%)	10	12	15	26	37
Swimming (%)	6	6	20	25	43
Bowling (%)	55	19	16	7	3
Diving (%)	18	13	14	24	31
Shooting/paintball (%)	18	9	25	26	22
Chess (%)	51	17	14	11	7
Tennis/table tennis (%)	14	20	24	20	22
Water polo (%)	44	21	18	12	5
Padding/kayak (%)	35	28	19	11	7
Dance (%)	1	7	16	29	47

Note: 1 – Sport I would never, under any circumstances do; 2 – Sport I would do if there was no other option; 3 – Sport I am not sure I would like to do; 4 – Sport I would like to do; 5 – Sport I would prefer most to do

Female university students (Table 5) preferred to be involved in dance (76 %), fitness drills/aerobics (70 %), swimming (68 %) and roller sports (63 %). A great interest could be noticed for diving (55 %), shooting/paintball (48 %) and volleyball (44 %), while less attractive were rugby (87 %), soccer (78 %) and bowling (74 %), as well as chess (68 %), track-and-field (66 %), wrestling/judo/karate/boxing (64 %), rowing/kayaking (63 %) and volleyball (58 %). The results in Tables 3, 4 and 5 indicate significant gender differences in the attitudes towards and interests for individual sporting activities. To confirm this difference, discriminant analysis was used.

Table 6: Correlation between variables and discriminant function.

Variable	DF 1
Running/walking/climbing (%)	0.020
Fitness/aerobic (%)	0.521
Gymnastics (%)	0.293
Sailing/windsurfing (%)	0.064
Handball (%)	-0.062
Wrestling/judo/karate/boxing (%)	-0.112
Soccer (%)	-0.452
Volleyball(%)	0.079
Basketball (%)	-0.114
Rugby (%)	-0.223
Track and field (%)	-0.144
Roller sport (%)	0.495
Swimming (%)	0.118
Bowling (%)	-0.105
Diving (%)	0.087
Shooting/ paintball (%)	-0.056
Chess (%)	-0.101
Tennis/table tennis (%)	-0.014
Water polo (%)	-0.127
Padding/kayak (%)	-0.128
Dance (%)	0.626

The structure of the discriminant function is bipolar. The examined group of female university students is on the positive pole of the discriminant function, whereas the examined male group of university students is on the negative pole of the discriminant function.. The variables on the positive pole of the discriminant function, i.e. the ones describing the examined group of female university students, are: dance, fitness drills/aerobics, roller sports, gymnastics, swimming, diving, volleyball, sailing/wind surfing, running/walking/climbing. The variables that defined the negative pole of the discriminant function, i.e. the ones describing the examined group of male university students, are football, rugby, athletics, rowing/kayaking, water polo, basketball, wrestling/judo/karate/boxing, bowling, chess, handball, shooting/paintball and tennis/table tennis.

Table 7 shows a high canonical discriminant coefficient (0.811) that differentiates significantly between the two groups. In fact, statistically significant differences were found between female and male university students ($p < 0.00$). In sport activities such as dance, fitness drills/aerobics, roller sports, soccer, gymnastics, rugby, track-and-field, rowing/kayaking, water polo, wrestling/judo/karate/boxing, swimming, basketball and bowling the differences were obtained between the male and female subjects ($p < 0.05$), whereas no statistically significant difference was obtained in sports such as tennis/table tennis, jogging/walking/climbing, shooting/paintball, sailing/windsurfing, volleyball, handball, diving and chess.

Table 7: Discriminant analysis.

Value	Canonical Discriminant Function Coefficients	Wilks Lambda	χ^2 test	df	p
1.922	0.811	0.342	187.106	21	0.00

Table 8: Differences between male and female university students.

Variable	Mean (male)	Mean (female)	t-test	df	p
Running/walking/climbing	3.009	2.937	-0.374	185	0.709
Fitness/aerobic*	3.787	2.076	-9.832	185	0.000*
Gymnastics*	2.935	1.911	-5.534	185	0.000*
Sailing/windsurfing	2.852	2.608	-1.209	185	0.228
Handball	2.417	2.667	1.356	187	0.177
Wrestling/judo/karate/boxing*	2.176	2.638	2.261	186	0.025*
Soccer*	1.907	3.610	8.845	188	0.000*
Volleyball	3.102	2.840	-1.289	187	0.199
Basketball*	2.593	3.013	2.147	185	0.033*
Rugby*	1.537	2.253	4.197	185	0.000*
Track and field*	2.056	2.570	2.713	185	0.007*
Roller sports*	3.676	1.924	-9.336	185	0.000*
Swimming *	3.917	3.506	-2.229	185	0.027*
Bowling*	1.843	2.190	1.985	185	0.049*
Diving	3.352	2.987	-1.639	185	0.103
Shooting/paintball	3.259	3.500	1.153	186	0.250
Chess	2.074	2.456	1.904	185	0.058
Tennis/table tennis	3.176	3.247	0.366	187	0.714
Water polo*	2.111	2.544	2.403	185	0.017*
Padding/kayak*	2.278	2.722	2.404	185	0.017*
Dance*	4.139	2.127	-11.796	185	0.000*

*Note: *statistically significant $p < 0.05$*

DISCUSSION AND CONCLUSION

Only 6 % of the students included in the survey exercise according to the recommendations of the World Health Organization, although their awareness of the importance of physical exercise is at a high level (51 % of the subjects responded: ‘’For me, it is very important to be involved in physical activity.’’). The paradoxical nature of the finding illustrates an alarming fact that almost 57 % of university students do not pay any attention to sports and physical recreation. Given the fact that university students

are expected to be prominent members of society and its future leaders, their health-related habits and physical activity levels are of particular interest.

One of the possible reasons is a very large number of academic requirements and home commitments related to studies. University students spend most of their time sitting at the computer desks doing their homework, so the amount of time that can be allocated to some other activities, especially to physical activities, is comprehensively reduced. I it also evident from the findings that the university students included in the survey are aware of and educated enough what regards the importance of physical activity and its impact on health, but due to time shortage and/or insufficient choice of PE classes, which are carried out only twice per week, very few of them are included in any organized form of physical exercise. In addition, the findings indicate distinct gender differences in PA or sporting activity preferences. Gender differences in the choice of physical activities have already been demonstrated in previous studies (Scully & Clark, 1997; Colly, Berman, & Van Millingen, 2005; Koca, Asci, & Demirhan, 2005), where team sports prevail among male university students with the predominance of soccer, while the female university students prefer to participate in individual and aesthetic sports (Hicks, Wiggins, Crist, & Moode, 2001).

Similar findings are also shown in our study where male university students were primarily oriented towards competitive sports, whereas an interest in active participation in non-competitive forms of PA prevailed among female university students. It is evident that girls are more than their male peers focused on the aesthetic components of the following sporting or physical activities: dance, fitness drills/aerobics, roller sports, gymnastics, swimming, diving, and volleyball. Such choice of activities for university students is in accordance with the gender role stereotypes about women's behavior and appearance. In this context, most of the activities selected by male university students can be explained; they have predominantly chosen physical contact or force sports practiced through competition.

Competitive sports and activities practiced in physical education classes can be used to promote physical activity and skill development, to build up character, and to prepare university students to live and work in a highly competitive environment (Goldstein & Iso-Ahola, 2006). However, their effect may be of a two-way nature. On one hand, competitive activities may, and they certainly do, stimulate interest for participation in certain activities, but only in physically well-prepared and skilled university students. On the other hand, these activities will turn away those with poor abilities or skills due to their feelings of incompetence or inferiority to others (Portman, 1995).

Since this study did not include all the University of Zagreb students, the inferences should be taken with caution. In the future line of research, the attitudes towards physical exercise, behaviors and habits of other university students with various academic pursuits should be examined. Considering mental and physical loads of academic programs from which much of psycho-emotional stress arises, as well as lack of free time which is directly linked to lack of time that could be alloted to physical exercise, it would be interesting to follow up health status of the students included in the survey some time after the survey has been conducted.

In contrast to the previous research (Carlson, 1995), the participants in the current study expressed their interest in PE classes during the time of their study, but they were also interested in a new curriculum. Based on the findings, it would be sensible to offer attractive sporting programs to university students, consistent with current trends in sport and following wishes and interests of gender-defined groups of university students. It is expected that such sport activities will achieve the best results in terms of activating and encouraging university students to embrace various forms of physical exercise and engage in various programs of sport activities. The findings also make it evident that there is a strong need for separate sporting and physical recreation with gender-specific program contents. This information should be greatly appreciated when PE curriculum is planned and delivered at universities. Eventually, this would lead to the separation of physical and health education courses and classes in relation to gender, and consequently, to the formation of homogeneous groups as regards preferences, abilities and skills.

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REWIEWS / POROČILA, 71–72

CONFERENCE REPORT »SOCIOLOGY AND SPORT IN THE FACE OF NEW CHALLENGES« – 10TH EUROPEAN ASSOCIATION FOR SOCIOLOGY OF SPORT CONFERENCE (EASS)

Cordoba, Spain, 8th -11th May 2013

Interesting presentations, Cordoba – the city with undeniable historic beauty, the uniqueness of Festival los Patios (Flower courtyards festival) and the outstanding hospitality and enthusiasm of the organising committee from Asociacion Espanola de Sociologia del Deporte were the main characteristics of the Conference.

This year nearly 160 participants from 25 countries attended the Conference with four honourable keynote speakers: Peter Donnely (Canada), Tess Key (United Kingdom), Kari Fasting (Norway) and Henning Eichberg (Denmark). Topics such as: Crisis in Sport Governance, Equity in Sport with Breaking the Stereotypes, Play as Production - Critical Femenology of Productivity and Sociological aAalysis of Sport and Health Policy Failings reflected the changes and the challenges that the societies must cope with nowadays in the time of economic crisis.

Three thematic symposia were presented with the topics of: Cultural Changes, Sport Organisation Research and Gender, which were also the most exposed topics among the other 17 parallel sessions. The sessions that were the most visited were the following: Social Policies, Globalization, London 2012, The Body, Health, Migration, Social Theory, Spaces and Social Values.

At the EASS Conference the 4th EASS Young Researcher Award was also granted. This year the first place went to Fabian Studer (University of Bern, Switzerland) for the paper "Destandardised Career Entry?" An Analysis of the Transition to Professional Life by a Swiss Sports Science Graduate.

In the summary the following social topics can be highlighted, as follows: The sport participation (differences in life span, state of the art in the school sport, sport as social and gender inequity, sport as inclusion or exclusion), Sport, health and space, Effect of changes on cultural and social values… All of these topics reflect the present situation in societies all around the world. From the social point of view, the London 2012 Olympic Games were also significantly touched upon. The only insufficiently covered topic was perhaps the one we would have to put more attention to – all aspects of elderly population participation in sport (health impact, social capital, inclusion/exclusion etc.).

The magnificent Conference venue (Palacio de Congresos), the hospitality of the organizers and a very rich social programme enabled us to mingle and share a lot of professional thoughts and ideas for further collaboration. Furthermore, we all cherish pleasant memories of the time spent in Cordoba.

The next, 11th EASS Conference 2014 will take place in Utrecht, the Netherlands, from 7th to 10th of May and will be organized by the Mulier Institute.

Saša Pišot

POROČILO S KONFERENCE »SOCIOLOGIJA IN ŠPORT V LUČI NOVIH IZZIVOV« – 10. KONFERENCE EVROPSKEGA ZDRUŽENJA ŠPORTNIH SOCIOLOGOV (EASS)

Cordoba, Španija, od 8. do 11. maja 2013

Zanimive predstavitve, Cordoba – mesto, ki mu ne gre zanikati zgodovinskih lepot, edinstvenost Festivala los Patios (Festival najlepših cvetočih dvorišč) in izredna gostoljubnost organizacijskega odbora španskega združenja športnih sociologov (*Asociacion Espanola de Sociologia del Deporte*) so glavne značilnosti letošnje konference.

Skoraj 160 udeležencev iz 25 držav se je udeležilo odmevnih uvodnih predavanj Petra Donnelya (Kanada), Tess Key (Velika Britanija), Kari Fasting (Norveška) in Henninga Eichberga (Danska). Teme, kot so: kriza upravljanja v športu, enakost v športu (rušenje stereotipov), sociološke analize pomanjkljivosti športnih in zdravstvenih politik, so bile teme, ki so odražale aktualne spremembe in izzive, s katerimi se spopada današnja družba v časih ekonomske krize.

V okviru konference so bili predstavljeni tudi trije tematski simpoziji s temami: kulturne spremembe, raziskovanje športnih organizacij in spol, ki so bile tudi najbolj poudarjene med ostalimi 17 paralelnimi sekcijami. Naj omenim le nekaj naslovov: socialne politike, globalizacija, London 2012, telo, zdravje, migracije, družbene teorije, prostor, družbene vrednote …

EASS konferenca vsako leto podeli nagrado za prispevek mladega raziskovalca, letos že četrtič. Prvo mesto je tokrat pripadlo Fabianu Studerju (Univerza v Bernu, Švica) za prispevek z naslovom "Destandardiziran karierni vstop"– Analiza prehoda švicarskih diplomantov fakultete za šport v poklicno življenje.

Pri povzemanju predstavljenih prispevkov bi lahko izpostavila še nekatere družbene teme, kot so: participacija v športu (razlike v različnih življenjskih obdobjih), analiza stanja šolskega športa, družbena in spolna neenakost v športu, šport kot vključitev ali izključitev, šport, zdravje in prostor, vpliv sprememb na kulturne in družbene vrednote ..., ki so tudi teme, ki odražajo trenutno stanje družbe po vsem svetu. Dotaknili so se tudi preteklih olimpijskih iger v Londonu leta 2012 in njihovega družbenega konteksta. Na konferenci sem kot že nekaj let pogrešala več prispevkov na temo gibalne/športne aktivnosti starejših z več vidikov (vpliva na zdravje, socialnega kapitala, vključenosti/izključenosti itd).

Veličastno prizorišče kongresa (Palacio de Congresos) in zelo bogat družabni program sta nam omogočila izmenjavo izkušenj in nadaljnjih idej za sodelovanje in seveda pustila prijeten spomin na Cordobo.

Naslednja, 11. konferenca EASS 2014 bo potekala v Utrechtu na Nizozemskem, od 7. do 10. maja 2014 v organizaciji inštituta Mulier.

Saša Pišot

GUIDELINES FOR AUTHORS, 73–77

GUIDELINES FOR AUTHORS

1. **Aim and scope of the journal:**
   Annales Kinesiologiae is an international interdisciplinary journal covering kinesiology and its related areas. It combines fields and topics directed towards the study and research of human movement, physical activity, exercise and sport in the context of human life style and influences of specific environments. The journal publishes original scientific articles, review articles, technical notes and reports.

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Text formatting: It is required to use the automatic page numbering function to number the pages. Times New Roman font size 12 is recommended, with double spacing between lines. Use the table function, not spreadsheets, to make tables. Use an equation editor for equations. Finally, all lines need to be number, were the first sentence of a pages is assigned line number 1.

c) Miscellaneous: Whenever possible, use the SI units (Système international d'unités).

d) The **title page** should include the title of the article (no more than 85 characters, including spaces), full name of the author(s) and affiliations (institution name and address) of each author; linked to each author using superscript numbers, as well as the corresponding author's full name, telephone, and e-mail address.

e) The authors are obliged to prepare two **abstracts** – one short abstract in English and one (translated) in Slovene language. For foreign authors translation of the abstract into Slovene will be provided. The content of the abstract should be structured into the following sections: purpose, methods, results, and conclusions. It should only contain the information that appears in the main text, and should not contain reference to figures, tables and citations published in the main text, and should not exceed 250 words.

f) Under the abstract a maximum of 6 appropriate **Keywords** shall be given in English and in Slovene. For foreign authors the translation of the abstract into Slovene will be provided.

g) The **main text** should include the following chapters: Introduction, Methods, Results, Discussion, Conclusions, Acknowledgement (optional), and References. Individual parts of the text can form sub-sections.

h) Each **Table** should be submitted on a separate page in a Word document after the Reference section. Tables should be double-spaced. Each table shall have a brief caption; explanatory matter should be in the footnotes below the table. Abbreviations used in the tables must be consistent with those used in the main text and figures. Definitions of symbols should be listed in the order of appearance, determined by reading horizontally across the table and should be identified by standard symbols. All tables should be numbered consecutively Table 1, etc. The preferred location of the table in the main text should be indicated preferably in a style as follows: *** Table 1 somewhere here ***.

i) Captions are required for all **Figures** and shall appear on a separate manuscript page, under the table captions. Each figure should be saved as a separate file without captions and named as Figure 1, etc. Files should be submitted in *.tif or *.jpg format. The minimum figure dimensions should be 17 x2 0 cm and a resolution of at least 300 dpi. Combinations of photo and line art should be saved at 600–900 dpi. Text (symbols, letters, and numbers) should be between 8 and 12 points, with consistent spacing and alignment. Font type may be Serif (Times Roman) or Sans Serif (Arial). Any extra white or black space surrounding the image should be cropped. Ensure that participant-identifying information (i.e., faces, names, or any other identifying features) should be omitted. All figures should be numbered consecutively Figure 1, etc. The preferred location of the figure in the main text should be indicated preferably in a style as follows: *** Table 1 somewhere here ***.

j) References

The journal uses the Harvard reference system (Publication Manual of the American Psychological Association, 5th ed., 2001), see also: http://www.apastyle.org). The list of references should only include work cited in the main text and being published or accepted for publication. Personal communications and unpublished works should only be mentioned in the text. References should be complete and contain up to six authors. If the author is unknown, start with the title of the work. If you are citing work that is in print but has not yet been published, state all the data and instead of the publication year write „in print“.

Reference list entries should be alphabetized by the last name of the first author of each work. Titles of references written in languages other than English should be additionally translated into English and enclosed within square brackets. Full titles of journals are required (no abbreviations).

Examples of reference citation in the text

One author: This research spans many disciplines (Enoka, 1994) or Enoka (1994) had concluded ...

Two authors: This result was later contradicted (Greene & Roberts, 2005) or Greene and Roberts (2005) pointed out ...

Three to five authors:
a) first citation: Šimunič, Pišot, and Rittweger (2009) had found ... or (Šimunič, Pišot, & Rittweger, 2009)
b) second citation: Šimunič et al. (2009) or (Šimunič et al., 2009)

Six or more authors:
Only the first author is cited: Di Prampero et al. (2008) or (Di Prampero et al., 2008).

Several authors for the same statement with separation by using a semicolon: (Biolo et al., 2008; Plazar & Pišot, 2009)

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Books:
Latash, M. L. (2008). Neurophysiologic basis of movement. Campaign (USA): Human Kinetic.

Journal articles
Šarabon, N., Kern, H., Loefler, S., & Rošker. J. (2010). Selection of body sway parameters according to their sensitivity and repeatability. Basic and Applied Myology, 20(1), 5–12.
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Book chapters
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