

learning laboratory based on the paradigm: research/knowledge/ best practices/ evidence.

The paradigm is open to new horizons of knowledge and in response to the cultural and social complexity. The culture and society of the third millennium is characterized by rapid changes. The horizons of knowledge, culture and society are expanded by the new knowledge and communication media that have contaminated all areas and times of life cycles. The PE teacher professional cycle is so long and the changes in students' are so fast. The new PE teachers need the flexibility competence for adaptation at the changes.

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## Knowledge about Physical Activity and Health in Undergraduate Preparation of Physical Education Teachers at Czech Universities

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### Abstract

Many student teachers are led by their interest in sport discipline to study teaching of Physical Education. However, this field at universities is not only about exercising and practising sports but also about sufficient knowledge about all aspects of physical activities, fitness, their determinants, health factors and other indicators.

Aim of this study is to compare preparedness of future PE teachers in the field of knowledge about PA and health. We used Comprehensive test to examine undergraduate students' knowledge. We tested 538 students at four different Czech universities during 2008-2011. Comprehensive test is standardised tool recommended to be used in comparative studies.

Results showed that students from Faculty of Sports Studies reached the most positive points in the test (62.45% of positive answers). Students from other three Czech universities reached approximately the same results (58.4-58.6% of positive answers). The question with the biggest statistical difference regarded to the most nutritious sources of energy for human body and the most difficult question was what the most important factors are for health.

Conclusion – teachers at universities should more focus on practical and life-oriented knowledge of student teachers because they will sooner or later educate our future generation and help them to lead healthy lifestyle.

### Key words

Comprehensive test, health, student teachers, educational system

### Introduction

Physical activity is a favourite interest and also one of the motives why studying at university (Buchta & Lisicki, 2011). Potential students can choose from the field studies that directs toward teacher's career (like physical education) or from much related fields that specialised faculties also offer. Among those programs we can find leisure studies, pedagogy of leisure time, applied physical education, applied

physical activity, protection of the people, management of sport and training and others.

The sphere dealing with physical activity and health is very wide and apart from practical subjects it covers also theoretical preparation that demands basic knowledge connected to physically active lifestyle. This knowledge should form not only the core of their studies, but also an outcome from the studies of PE. Because the main aim of school PE is to develop also physical abilities, skills and knowledge, personal characters and positive attitude of students toward physical activity (Rychtecký & Fialová, 2000). Apart from the PE content knowledge (Ružbarská & Turek, 2010), future teachers should obtain at universities knowledge for teaching, general pedagogic knowledge, curriculum knowledge, pedagogical content knowledge, knowledge of learners and their characteristics, knowledge of educational contexts, and knowledge of educational ends, purposes, values and philosophical and historical influences (Hayes, Capel, Katene, & Cook, 2008; Kiriacou, 1991; Shulman, 1987).

For creation of Comprehensive test that comprises physical education content knowledge we used information from curriculum of 9<sup>th</sup> grade of elementary schools and curriculum of high school biology. Some knowledge about human biology and aspects of health future students must prove during their acceptance examination that differentiates potential undergraduate students.

The aim of our long-term examining was to find how permanent this knowledge is in university students. For analysis we used the results of Comprehensive test that is to reveal differences not only in knowledge but also possible sphere that is needed to highlight during outlining the content of some subjects that are necessary for teachers' preparation. The differences were compared for four different Czech universities and regarding of gender.

### Methods

During 2009-11 collection of data took place at 4 universities (Palacky University in Olomouc, Masaryk University in Brno, University of West Bohemia in Plzeň, University of J. E. Purkyně in Ústí nad Labem) where cooperated teachers handed out Comprehensive test to their students for completing. Tests were collected from students of 1<sup>st</sup> to 3<sup>rd</sup> classes of bachelor study program. Comprehensive test about health and physical activity consists of 32 questions that are divided into four dimensions. Each dimension comprises of eight questions and these dimensions are – condition (with orientation on all aspects of fitness), energy (information about energy expenditure of various PA etc.), nutrition (e.g. some rules or recommendations for nutrition, eating habits etc.), and education (e.g. PA guidelines, practical recommendations, examples of good practice). In each question students choose one correct answer out of four possibilities. Comprehensive test was standardised (Vašíčková, Neuls, & Frömel, 2011) and

recommended for comparative research. Completed tests (n=538) were inserted into special software and data were exported and processed using IBM SPSS 19.0. For statistical analysis we used descriptive statistics, frequencies, for comparative purpose we used Kruskal Wallis test with statistical significance on the two levels \*p<0.05 and \*\*p<0.01.

### Results and discussion

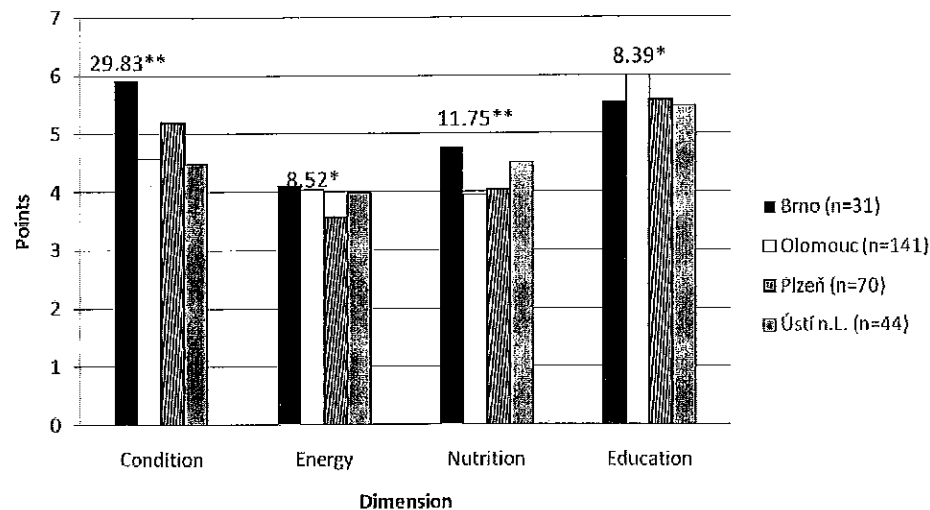
Comprehensive tests were completed by 286 men and 252 women, students of bachelor teaching program focusing on Physical Education from four Czech universities. Results from the test (table 1) show the best score was achieved by students from Brno. They scored better in three dimensions and also in total evaluation. Maximal points in each dimension are 8; maximal total score is 32 points. There is only a weakness of this study that we could not obtain equal number of completed tests from participated Universities.

**Table 1** Differences, mean and standard deviation of score in each dimension and total result of Comprehensive test in four Czech universities' students

Dimension	UNI-Brno (n=60)	UNI-Olomouc (n=230)	UNI-Plzeň (n=180)	UNI-Ústí n. L. (n=68)	Chi-square
	M (±SD)				
Condition	5.47 (±1.44)	4.60 (±1.37)	4.73 (±1.44)	4.62 (±1.51)	16.761**
Energy	4.10 (±1.45)	4.03 (±1.26)	3.69 (±1.25)	4.07 (±1.36)	8.891*
Nutrition	4.62 (±1.63)	4.01 (±1.24)	4.13 (±1.15)	4.40 (±1.50)	10.408*
Education	5.80 (±1.67)	6.11 (±1.21)	6.12 (±1.17)	5.68 (±1.25)	6.552
Total	19.98 (±4.09)	18.76 (±3.14)	18.68 (±2.97)	18.76 (±3.77)	5.700

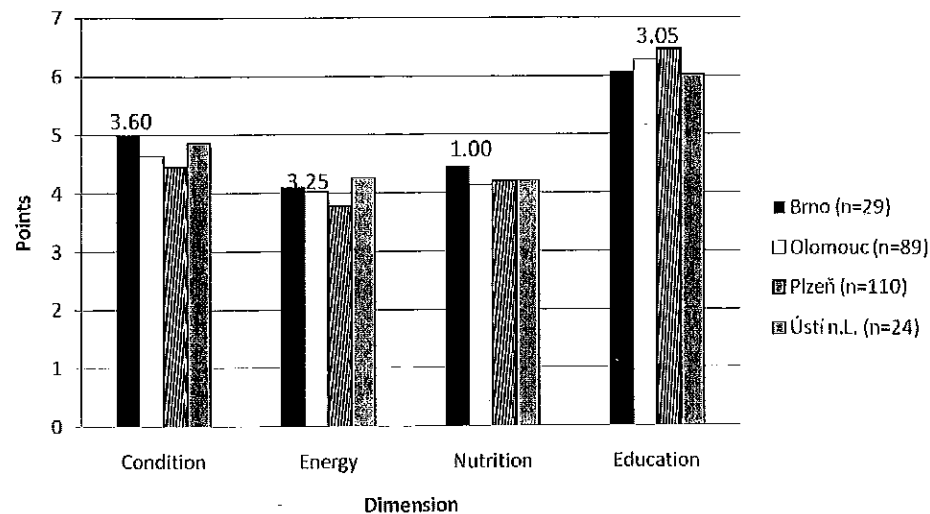
Note: Chi-square – Kruskal Wallis test; \*p<0.05, \*\*p<0.001

When we compared test results divided by gender, in men (figure 1) we found bigger differences at four universities. Men from UNI-Brno reached highest points in condition, energy and nutrition dimensions. Men from UNI-Olomouc scored the best in education dimension. In all four dimensions we found statistically significant differences.



**Figure 1** Results of men's Comprehensive test (dimensions) – comparison (above columns Chi-square with statistical significance, \*\* $p \leq 0.01$ , \* $p \leq 0.05$ )

Women's test results (figure 2) did not oscillate so much as men's; we did not find statistically significant differences among universities. Women from UNI-Brno scored best in condition and nutrition dimensions; women from UNI-Ústí scored best in energy dimension and women from UNI-Plzeň scored best in education dimension.



**Figure 2** Results of women's Comprehensive test (dimensions) – comparison (above columns Chi-square with no statistical significance)

We also tried to find the differences between gender and our results confirmed previous finding (Vašíčková, Neuls, et al., 2009) that women scored better than men; women have better knowledge about health and physical activity, specifically in education dimension.

Regarding each question we cannot be very specific but students should know that for health the most important factor is good physical condition even with a few extra kilos. This question was right only for 6% of university students. On the other hand, 96% of students answered correctly and knew that healthiest eating occurs five times per day in small portions (do not miss breakfast). But it is questionable whether they follow this recommendation. When we analysed association between knowledge about PA and really performed PA we found negative trend in high school students (Vašíčková, Chmelík, Frömel, & Neuls, 2009). High school students scoring better in Comprehensive test had less performed PA during a week. It can be also connected with cognitive sphere (some high school students are cleverer than others) and influenced by various other interests and hobbies practised in students' leisure time. Content of the questions from Comprehensive test is to highlight and educate some important facts being part of content or subject knowledge of P.E. (In some studies the term "subject matter") which are prioritised by student teachers and mentors (Hayes, et al., 2008).

Not many studies were analysing knowledge about physical activity and health factors; we found a study about attitude towards physical activity in the Malaysian context, their general attitude, attitude towards the Physical Education subject and attitude towards the value of the scientific basis of physical activities (Omar-Fauzee, et al., 2009) in undergraduate students. They found that male students showed more positive attitudes towards the general knowledge and scientific foundation dimensions compared to females. In Czech condition we used Comprehensive test firstly for high schools students to verify its content (Vašíčková, et al., 2011).

Apart from above-mentioned weakness, there is another limit of having no information about the classes. The big problem the most influencing the final score of the test is also the composition of study programs at various Czech universities. Studying duties vary not only among faculties but also among classes and individual students because of credit system. Students can choose the subjects to study according to their own needs and feelings which reflect also in their test score. The most useful for research would be to apply this Comprehensive test before state final exam but this is logistically very problematic.

Based on the test results we alert that there is a great need to insert knowledge about health and physical activity (especially tasks oriented on energy expenditure and proper nutrition) not only into school education programmes but also into preparation study programme of future teachers of P.E. and health education too.

## Conclusion

Our study wanted to alert that there are gaps between what undergraduate students know and should know about physical activity and health, some basic facts. We examined knowledge with use of Comprehensive test and analysed its results with regard to the type of University and gender. The differences among university students exist in the Czech Republic and we can confirm that female students scored better than male students.

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## Attitudes of University Students to Movement Activities Performance

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### Abstract

In the contribution authors deal with research of attitudes to movement activities performance of Bratislava university students. Questionnaire method (606 respondents) was used with Lickert scale of summed estimations that is statistically and logically evaluated. Authors found the most significant differences among students of Faculty of Physical Education and other faculties students (same for boys and girls) in attitude components tendency to act and cognitive; slighter smaller difference was found in emotion component. Sex differences in single faculties were rare in cognitive and emotion component, when girls reached better results.

### Key words

Attitudes, movement activity, university students

### Introduction

Attitudes belong to the important motivation factors and as well as factors of the whole personality development, which not only orient human being behaviour and activity, but very often determine its daily advance and course. Generally, the attitude is relatively stable man readiness to react at certain way to persons, groups, situations, things, opinions and ways of behaviour. This view on attitude definition like readiness at certain reaction way is necessary to stress that attitudes are accented by emotions and oriented on values (Kollárik & Sollárová, 2004). They can not be considered being person qualities, but as a relatively firm characteristics, which express his positive or negative position on certain sphere of concrete situation. Attitudes that are formed in connection with activity are defined like clearer, more stable in time, in memory better fixed and more resisting to a change (Výrost, 1989).

Olson, Vernon and Harris (2001) realized genetic determination research of individual differences in attitudes and found, that attitude to physical activities demanding movement activity, position to organized sports playing, or attitude to physical fitness are genetically conditioned. By correlation they found, that attitude to physical fitness and attitude to emotion experience positively significantly correlate with physical fitness. The process of attitudes formation takes a course during adolescence, for in this period of individual development man comes into