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SPORT SOCIALIZATION OF CHILDREN WITH VISUAL IMPAIRMENT IN PREPUBESCENT AND PUBESCENT AGE

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Submitted in May, 2003

The purpose of this study was to explore the level of sport socialization of children with visual impairments in the Czech Republic. The participants were 84 students (44 boys, 40 girls) with visual impairments at the age of prepubescence and pubescence. Respondents were divided into two groups based on the level of impairment: a) B_1 and b) B_{2-3}. We used a questionnaire by Válková (1998), which consists of the following scales: a) The Level of Sport Skill Scale "What I can do", b) The Level of Sport Socialization Scale "Where I play games and sports" and c) The Level of Sport Socialization Scale "What I use for play and sports". The results show that the level of physical activity of girls and boys in all groups are in the range of low average scores. In sport socialization the decline can be seen among girls from the age of thirteen on. Similar results can be seen among boys, but overall the levels of sport socialization are higher among boys then among girls. Among boys, the highest levels of sport socialization are between the age of ten and fourteen. After the fourteenth year we can also see a decline in these scores.

Keywords: Socialization, sport, adapted physical education, adapted physical activity, blind, visual impairment.

INTRODUCTION

Coakley (1998) defined socialization as a complex and interactive process, through which we form ideas about who we and how are we connected to the world around us. Williams and Taylor (1994), representatives of socialization in disability sport, defined socialization as: "... a process by which the individual internalizes the knowledge, values, and norms that are essential to participation in social life". Socialization can be simplistically conceptualized in two basic ways: a) Socialization as internalization of external norms or b) Socialization as an interactive process, where the individual plays an active role.

In the area of adapted physical activities the most work on sport socialization was done by Williams (e.g. Williams & Taylor, 1994). In the area of sport for persons with VI the only work has been done by Nixon (1989) who did a case study on the sport socialization of boys with visual impairments in general sport clubs (football and athletics). In the article "The Integration of Disabled People in Mainstream Sports: A Case Study of a Partially Sighted Child" Nixon introduced us to the rich account of a VI child who participated in a sport club. Unfortunately he did not discuss who made the decisions about participating or remaining in the sport club. The most important finding of the study was the problem that the competitive approach creates in relation to the socialization and integration of the above-mentioned boy. The emphasis on competition made the integration of this boy somewhat difficult. Although the article serves as an excellent case study I am missing the linking of the incidents and discussion of the findings using any models or theories, making the findings more generalizable. The level of sport socialization reflects the level of self-evaluation of movement skills as well as the level of the role played by movement in the life of a child with visual impairment. The level of socialization (Simons et al., 1990) can be connected with the perceived mastery of movement activities and participation in activities in different environments. The purpose of this study was to explore the level of sport socialization of children with visual impairments in the Czech Republic.

METHODS

Participants

The participants were 84 students (44 boys, 40 girls) with visual impairments (VI) of the prepubescent and pubescent age. The group of children with VI was divided according to their level of visual impairment into group B_1 and B_{2-3}. In the final stage of our research we have focused solely on children with total blindness. The classification system of IBSA (International Blind Sport Association) was used to create these categories. The letter B represents "Blind" and the numeral index represents the level of impairment: a) B_1 – total blindness, the inability to recognize objects or shapes from any distance; b) B_2 – the ability to recognize objects or shapes, visual focus 2/60 with the greatest size of the visual field being 5°; and c) a visual focus of 2/60 to 6/60 or the limitation of the visual field from 5° to 60°.

Questionnaire

In this study we have used a questionnaire and scales created by (Válková, 1993): a) The Level of Sport Skill Scale "What I can do"; b) The Level of Sport Social-

ization Scale "Where I play games and sports"; c) The Level of Sport Socialization Scale "What I use for play and sports" (All three scales are divided into two environments: home and school). The Level of Sport Skills Scales includes 10 common sport activities (Can you? run, jump, throw, catch, ski, swim, skate, ride a bicycle, row a boat, do hiking), and sport activities specific for persons with VI (goalball, showdown, kombiball, etc.). The Level of Sport Socialization Scale "Where do I play games and sports" is used to determine where children with VI play and do sports (terrace, balcony, garden, backyard, street, neighborhood, playground, forest, meadow, swimming pool, club, at a space used by an activity group or at the homes of friends). The Level of Sport Socialization Scale "What I use for play and sports" is used to determine the frequency of playing with the following equipment (bike, ball, jump rope, skates, roller skates, skate board, swing-climb set, sledge, bobsledge, skies, racket /badminton, tennis, table tennis, showdown/ children's pool, musical instrument, or stuffed animal) as well as with a pet. For evaluation of the level of sport socialization the following criteria were used by Válková (1998).

Point evaluation of the level of sport skill

		1st part		2nd part	Total
VL	very low	20–24 points	+	1 point	20–26 points
L	low	25–30 points	+	2 points	27–32 points
LA	lower average	31–35 points	+	4 points	33–39 points
HA	higher average	36–40 points	+	6 points	40–46 points
H	high	41–45 points	+	8 points	47–53 points
VH	very high	46–50 points	+	10 points	53–60 points

Sport socialization (scale b + c) min – 37 points, max – 124 points. Socialization is scored separately for home and for school.

The point evaluation of sport socialization is as follows:

VL	very low	under	48	points
L	low		48–60	points
LA	lower average		61–73	points
HA	higher average		74–86	points
H	high		87–99	points
VH	very high	over	99	points

RESULTS

Results are presented in tables where the results for given age groups are average scores. The results for girls and boys are presented separately in two groups B_1 and B_{2-3} Zit. It is evident from the scores that results for both girls and boys are at a lower average level. If we compare scores of sport skills and scores of sport socialization we can see that the sport skill scale has higher scores. Only in a group of girls were B_1 results (apart from 7 year olds) on the level of higher average scores.

Similar results were found in the group of girls B_{2-3}. In this group the lower average scores occurred with 8 year olds. In other age groups scores were at a higher average level. It is evident from results that after reaching 9 years the scores on the sport skill scale are relatively stable. On the sport socialization scale the scores start to decline with 13 year olds. Similar results can be found with boys, but the scores were slightly higher than with girls. The highest scores in sport socialization can be found between the ages of 10 to 14. After this age scores start to decline.

TABLE 1
Sport socialization at home and at school – girls B_1

Age	7	8	9	10	11	12	13	14	15	16
A skills	39	40	46	45	43	44	43	43	46	44
Score A	**LA**	**HA**	**HA**	**HA**	**HA**	**HA**	**HA**	**HA**	**HA**	**HA**
B soc. home	28	31	30	36	41	40	37	32	39	31
C soc. school	23	26	32	29	33	33	30	30	28	26
B + C	**51**	**57**	**62**	**65**	**74**	**73**	**67**	**62**	**67**	**57**
Score B + C	**L**	**L**	**LA**	**LA**	**HA**	**LA**	**LA**	**LA**	**LA**	**L**

TABLE 2
Sport socialization at home and at school – girls B_{2-3}

Age	7	8	9	10	11	12	13	14	15	16
A skills	36	38	42	46	43	44	43	46	46	42
Score A	**LA**	**LA**	**HA**	**HA**	**HA**	**HA**	**HA**	**HA**	**HA**	**HA**
B soc. home	30	35	36	40	37	40	35	34	33	34
C soc. school	28	31	30	34	32	31	30	26	25	26
B + C	**58**	**66**	**66**	**74**	**69**	**71**	**65**	**60**	**58**	**60**
Score B + C	**L**	**LA**	**LA**	**HA**	**LA**	**LA**	**LA**	**L**	**L**	**L**

TABLE 3
Sport socialization at home and at school – boys B_1

Age	7	8	9	10	11	12	13	14	15	16
A skills	36	35	40	43	41	41	43	41	44	43
Score A	**LA**	**LA**	**HA**	**HA**	**HA**	**HA**	**HA**	**HA**	**HA**	**HA**
B soc. home	35	40	40	38	42	40	39	41	37	37
C soc. school	32	31	31	30	33	36	35	31	31	28
B + C	**67**	**71**	**71**	**68**	**75**	**76**	**74**	**72**	**68**	**65**
Score B + C	**LA**	**LA**	**LA**	**LA**	**HA**	**HA**	**HA**	**LA**	**LA**	**LA**

TABLE 4
Sport socialization at home and at school – boys B_{2-3}

Age	7	8	9	10	11	12	13	14	15	16
A skills	37	32	38	45	42	43	42	44	44	40
Score A	**LA**	**L**	**LA**	**HA**	**HA**	**HA**	**HA**	**HA**	**HA**	**HA**
B soc. home	31	36	36	39	42	40	38	41	41	36
C soc. school	33	36	36	34	31	30	35	34	30	30
B + C	**64**	**72**	**72**	**73**	**73**	**70**	**73**	**75**	**71**	**66**
Score B + C	**LA**	**LA**	**LA**	**LA**	**LA**	**LA**	**LA**	**HA**	**LA**	**LA**

DISCUSSION

The socialization of children with VI in the Czech Republic has been studied by Šafaříková (1999). She has evaluated the quality of movement activities and the relation of children with VI to physical activity. Šafaříková used a scale, where children had to choose the amount of activity (often, sometimes, never, and not related) in these areas: a) Leisure time in boarding school; b) Leisure time outside of boarding school (weekends, holidays); c) Which activities do you like to do most in your leisure time?; d) Active involvement in sport clubs; e) Preferences among school subjects.

a) Leisure time in boarding school. The results show that most children take part in movement activities only sometimes. The prefer playing a musical instrument. They spend their leisure time listening to music, working on computers, and being with friends.
b) Leisure time outside of boarding school (weekends, holidays). The greatest difference in comparison with the previous question was in the frequency of movement activities. Half of the respondents answered that they do not take part in these activities at all. They also spend a lot less time with friends.
c) Which activities do you like to do most in your leisure time? The interest in music and playing a musical instrument was placed as first. Sport and studying were evaluated on the same level.
d) Active involvement in sport clubs. Four fifths of all respondents answered that they are not actively involved in sport clubs.
e) Preferences among school subjects. Of the thirteen subjects listed in the questionnaire, physical education was evaluated as the sixth most popular.

For comparison we now present some findings of Frömel, Novosad and Svozil (1999), who studied the involvement of the general population of children in organized as well as non-organized forms of physical activity in leisure time. The mentioned authors concluded that the involvement of children in organized forms of physical activity is insufficient. Frőmel et al. (1999) came to

conclusions similar to conclusions of Šafaříková (1999) and our findings, that physical activity in non-organized forms declines with age in both girls and boys. Frömel et al. (1999) also found that the amount of physical activity in all age groups is less among girls then among boys. Based on our findings we can also state that the situation is the same among children with VI. The only significantly different group among youth (with and without VI) is the group of youth enrolled in sport clubs (5–7 times per week). This group of organized athletes is almost non-existent among youth with VI. Youth with VI often belong to groups missing physical activity completely. The different levels of VI affect the tendency to have a passive life-style. We must respect these specific needs of children with VI in work with them. Stimulation to activity and movement should therefore be an integral part of all involved in the education of children with visual impairments.

Based on these conclusions we must state that the area of organized movement activities of children with VI deserves more attention. Unfortunately in the first levels of elementary schools, when children have the spontaneous need for movement, there is a lack of well prepared physical education specialists. Physical education in special schools for children with VI is often exchanged for rehabilitation with physiotherapeutic procedures. We have all reasons to believe that if we do not create an interest in physical activities among prepubescent children, we will have problems in solving this situation later on. It is extremely difficult to change stereotypical behavior in the area of physical activity, even when physical education specialists are well prepared at the second levels of elementary special schools.

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SPORTOVNÍ SOCIALIZACE DĚTÍ SE ZRAKOVÝM POSTIŽENÍM V OBDOBÍ PREPUBESCENCE A PUBESCENCE

(Souhrn anglického textu)

Cílem této studie bylo prověřit míru sportovní socializace dětí se zrakovým postižením v České republice. Výzkumu se zúčastnilo 84 žáků (44 chlapců, 40 dívek) se zrakovým postižením v období prepubescence a pubescence. Skupinu zrakově postižených dětí jsme rozčlenili podle stupně zrakového postižení na dvě kategorie B_1 a $B_{2\text{-}3}$. Použili jsme dotazník Válkové (1998), který se skládá z následujících škál: a) Škála objemu dovedností „Co již umím a vím“; b) Škála míry sportovní socializace „Kde si hraji a sportuji“; c) Škála úrovně sportovní socializace „S čím si hraji a sportuji“. Z celkového skóre je patrné, že se skupina dívek i hochů ve všech věkových kategoriích pohybuje v pásmu nižšího průměru. U sportovní socializace dívek, počínaje třináctým rokem, začíná úroveň sportovní socializace klesat. Obdobné výsledky dosahovali i hoši. Pouze úroveň skóre byla v průměru vyšší než u dívek. Nejvyšší úroveň sportovní socializace kulminuje mezi desátým a čtrnáctým rokem. Potom i u hochů začíná klesat.

Klíčová slova: socializace, sport, aplikovaná tělesná výchova, aplikované pohybové aktivity, nevidomý, zrakové postižení.

EMPIRICAL SURVEY OF THE VALUE ORIENTATION OF THE CITIZENS OF LIBERECKÝ KRAJ

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The Czech Republic aims to join modern international structures. But it is not possible to achieve this priority of our foreign policy without trying to adapt different domains of our social life to the usual standards and mechanisms valid in the countries of the European Union. The integration process of the Czech Republic into the European Union involves also the problem of physical culture. That's why it is necessary for the Czech Republic to get ready for this integration process and to draw on experience of the European Union member countries, where economic, social and law aspects are on a necessary level. It is an accompanying phenomenon of modern European countries to care systematically for region, town and community development, where the best end decisive conditions for good working of physical culture are created. The article informs readers about a part of an extensive survey which concerned the problem of physical education and sport conception and development in Liberecký kraj. We regard as important that the public administration deals with this problem (also in the context of the approaching entrance to the European Union).

Keywords: Society, man, life style, leisure time, interests, attitudes.

INTRODUCTION

According to Rabušic (1996), it is thanks to a dynamic post-war evolution that today's modern societies are going through important structural modifications which transform their economic, political and social systems in an essential way. Highly industrialized nations have entered a new era of social-economic existence where we insist above all on the appreciation and esteem of the ability to articulate thoughts, it means on a society of "cultural capital". It is obvious that people absorb these changing conditions and react. The result is a new life style, different value orientation, new identity.

Rabušic also states (ibid.) that the movement of these societies towards a post-industrial evolution stage causes a change of value priorities, which he describes as a movement from materialist values (man's orientation to economic prosperity, material security, stable economic increase, observance of social rules) towards post-materialist values (freedom of self-realization, citizens' possibility to participate in important governmental decisions, to influence public administration in their direct surroundings, to create a less impersonal and more humane society and to live in a first-quality environment).

Bell (1980, 329) observes that the society is characterized by a "radical antagonism" between different fields and objects: the technical-economic one is following the idea of functional rationality and efficiency, the cultural one is focused on self-realisation and human experience (and at the same time this field often ruins the first one) and the political field concentrates on equality and law. Brugger (1994), Gehlen (1978) and Mitchell (1983) affirm the same fact and together with Valéry (1957) they say that this social difference is supported by an inter-individual variety, because we all incline to "different identity tendencies".

Zapf (1987) as well as Giddens (1998) are talking about "pluralization of life styles". There are specific pluralizations depending on the type of occupation which are attached to a segmental dichotomisation of the private and public domain. That's why every individual today is forced to communicate with very different worlds of work and private life having their own standards. The appearance of new life stages is caused by pluralization processes. Zapf is talking (ibid.) about a "post-adolescence"of 20 to 30-year-old people or about a stage of "young seniors" or "active pensioners". He also alludes to the fact that a "normal family" is presently in the minority in consideration of unmarried couples, lonely people, single parents, divorced people and second marriages. This pluralization causes insecurity: we are not familiar with the style of the above-mentionned life forms yet, those who are concerned must look for it themselves and there is no place to adopt it from.

To sum up, the sociologists state that today's society does not represent any basic form but a mixture of very different forms. Contemporary society resembles a liberal network of different and cotroversial formations.

Welsch (1994) affirms that there is a strong wave of movement for self-realization, an effort to liberate mentally one's self (see yoga, psycho-analysis, expressional dance, zen, group therapy, transcendental meditation, etc.).

He also says (ibid.) that health care, fear of old age, hygiene, massage, sauna, diets, sport, tan cult, etc. are a typical characteristic of the above-mentioned. The body becomes a symbol of a most deep identity: the opposition body – soul has disappeared, there are standards saying what we should look like.

To live a free life without any limits, to choose our own way of living: that is, at the present time, the most important social and cultural event and also an uncontradictable right in our contemporaries' eyes.

Within the framework of the elaboration of the "Conception of physical education and sport development in Liberecký kraj" the taskmaker (the Council of Liberecký kraj) asked to evaluate the current state of value orientation of this region's citizens in relation to four thematic domains:

1. Improvement of a healthy life style;
2. Level of physical education and sport advertising;
3. Demand for sport and physical education activities (relation to sport);
4. Citizens' requirements and expectations of the public administration including conditions for physical education and sport.

The complexity and the extent of the problem represent a very complicated task which in fact covers the size of four empirical investigations.

Regarding the economic and time possibilities the research team conceived this task as a diagnostical probe into the four above-mentioned thematical domains.

METHODOLOGY

A survey schedule of a questionnaire character comprising 27 questions and 6 identifying signs mostly of a demographic character was worked up and confirmed by the taskmaker as a basic research technique.

Within Liberecký kraj a school network was made up of chosen schools and the questionnaires were distributed by the pupils to three generations (children, parents, grandparents). One thousand five hundred questionnaires were distributed and after a logical control and rejection of the ones unusable for statistical processing, there were 592 questionnaires available which represents 39.5 % recoverability. We underline the fact that our investigation is only a diagnostical research of an inquiry character which does not claim, according to statistical principles, the representativeness of a test sample. That is why we cannot here apply methods of mathematical-statistic induction.

Partial analysis should follow this regional diagnosis in different micro-regions, optionally on location.

Note: The authors are using a terminology that was set by the taskmaker and are aware of possible expert comments.

Characteristic of investigated sample

There were 592 questionnaires used for statistical elaboration. Men (38.5 %) and women (61.5 %) aged 15 and more participated in the completing of the questionnaires. Concerning the educational aspect, 36.5 % of respondents received a primary education, 18.1 % did not have a "maturita" (similar to the German Abitur or English School Leaving Examination), 37.5 % received a secondary and 8.1 % a higher education. 43 % of the respondents were economically active and 57 % economically inactive (students, house wives, pensioners and unemployed). There were 41.1% economically active men and 44.3 % economically active women, economically inactive were 58.9 % of the men and 44.3 % of the women (counted from the total of men and the total of women).

It was found out that concerning membership in a physical education or sport organisation, 24.6 % of respondents were, according to their verbal expression, members of an organisation, 27 % used to be members and 38.4 % have never been members of any organisation. Men (37.4 %) are more often currently members that women (16.4 %), concerning a former membership the difference is not so remarkable (men 34.7 %, women 38.7 %). Women have much more often never been members of any physical education and sport oragnisation, (44.9 %) than men (29.6 %).

In our contribution we concentrate on the analysis of inhabitants' point of view and attitudes towards the problem of life style.

Improvement of a healthy life style

Life style represents a complicated synthetical dynamic multi-factor category which is connected with economic, cultural and social life conditions and with social indicators of life quality. Life style influences everybody's social roles and includes (said in a simplified form) the domains of work, living and leisure time. What is also very important here is the sub-culture of individual social groups. Life style is of course determined by sex, place of residence, age and life cycle, education, marital status, profession, economic independence, etc. Individual social status determines our position in society according to our education, professional character and prestige, share in authority, income and way of life.

Within our empirical survey there were nine questions concerning the problem of life style. We were interested in what importance the respondents attributed to physical education and sport from the perspective of a healthy life style. The respondents judged the questions with the help of a five point scale. TABLE 1 indicates the total order as well as men's and women's opinions.

TABLE 1
What significance do you attribute to the importance of physical education and sport from the perspective of a healthy life style?

	Total order	Men	Women
Healthy physical and mental development in youth	3.	3.	2.
Physical condition maintenance	2.	2.	5.
Preservation and strengthening of health	1.	1.	1.
Relaxing from an unilateral and tiring job	7.	7.	9.
Gaining of the ability to overcome obstacles (one self)	5.	5.	4.
Self-confidence increase	6.	6.	6.
Spending of leisure time	4.	4.	3.
Possibility to surpass	10.	10.	10.
Consolidation of social relations	8.	8.	7.
Gaining of money or good professional position	9.	9.	8.

For both men and women, the preservation and strengthening of health is the most important item. For both of them the possibility of surpassing is a less important item. For women healthy physical and mental development in youth, spending of their leisure time and gaining the ability to overcome obstacles are more important items than for men. This fact shows the "maternal" view of this problem. For men on the contrary it is more important to keep fit, relax after a tiring job and consolidate social relations which are items focused on man's ego.

Total order (from the first to the fifth place):

1. preservation and strengthening of health;
2. maintenance of physical condition;
3. healthy physical and mental development in youth;
4. spending of leisure time;
5. gaining of the ability to overcome obstacles or oneself.

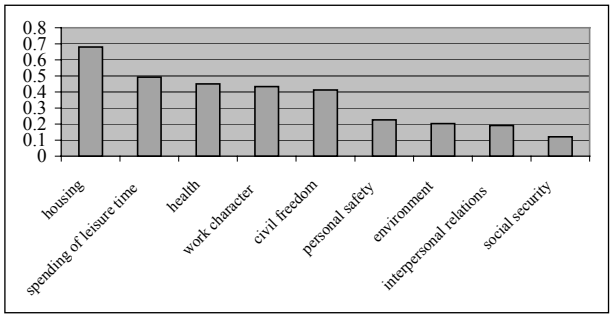
We can conclude that the obtained results correspond in fact with the trends of our society's evolution and accentuate the individual demands and needs of every person.

We were next interested in the evaluation of life quality under particular conditions. The results are summed up in TABLE 2 and Fig. 1.

TABLE 2
How do you evaluate the following life qualities in your particular conditions?

Life qualities	Very satisfied (in %)	Quite satisfied (in %)	Not bad (in %)	Rather uns. (in %)	Very uns. (in %)
Environment	6.6	34.7	37.9	15.5	3.3
Health	12.9	49.4	25.9	8.9	5.9
Housing	25.0	47.7	18.2	5.5	6.6
Interpersonal relations	8.3	33.7	35.2	15.9	6.9
Spending of leisure time	22.8	38.1	27.9	9.0	2.2
Work character	14.5	42.0	30.5	9.3	3.7
Personal safety	8.9	32.4	39.9	14.7	4.1
Social security	9.6	29.8	33.3	16.9	10.4
Civil freedom	14.1	43.6	38.7	9.7	2.9

Fig. 1
Evaluation of life quality – in total: men and women



To compare individual life qualities we counted with the help of an applied coefficient the evaluation of the elements of work situations

$$Z = \frac{\Sigma(+) - \Sigma(-)}{\Sigma(n)}$$

where Σ (+) = total of positive answers
Σ (–) = total of negative answers
Σ (n) = total of all answers

The coefficient Z acquires values from +1 to 0 and to –1 where the higher positive value is had by the more positive answer and vice-versa.

For a better demonstration and analysis we show the total order of the evaluated life qualities:

	Z
1. Housing	+ 0.680
2. Spending of leisure time	+ 0.492
3. Health	+ 0.450
4. Work character	+ 0.434
5. Civil freedom	+ 0.412
6. Personal safety	+ 0.226
7. Environment	+ 0.203
8. Interpersonal relations	+ 0.191
9. Social security	+ 0.121

The second classification based on gender showed some differences concerning satisfaction with different life style qualities:

Men		**Women**
+ 0.186	Environment	+ 0.293
+ 0.588	Health	+ 0.417
+ 0.712	Housing	+ 0.664
+ 0.243	Interpersonal relations	+ 0.170
+ 0.606	Spending of leisure time	+ 0.422
+ 0.379	Work character	+ 0.457
+ 0.309	Personal safety	+ 0.193
+ 0.180	Social security	+ 0.099
+ 0.408	Civil freedom	+ 0.414

Fig. 2
Evaluation of life quality – men

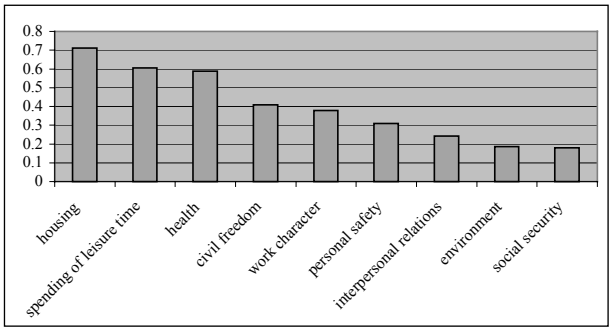
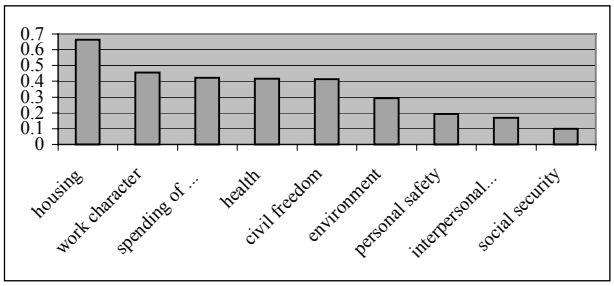


Fig. 3
Evaluation of life quality – women



Men are relatively more satisfied with health, housing, interpersonal relations, spending of leisure time (relatively bigger difference), personal safety and social security. Women are on the other hand relatively more satisfied only with job character and civil freedom. In all categories positive evaluation dominates for both men and women. In total we can regard the satisfaction with personal safety, environment, interpersonal relations and social security as the most problematic items. The respondents are relatively the most satisfied with housing as well as spending of leisure time, health, work character and civil freedom. What was interesting were the respondents' ideas about the best way of spending their leisure time. Almost 1/2 of them would spend their leisure time outdoors, 1/3 at a secondary residence (weekend-house, cottage, garden), almost 1/3 of them would like to spend their leisure time in a cultural institution, about 1/4 of respondents would like to do sport in nature. Not even 1/5 of respondents would prefer to stay at home and 1/6 of them prefer to go to some sport institution, entertainment and health centres, and playgrounds.

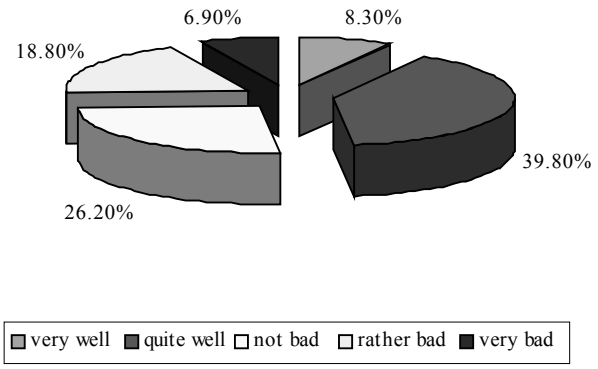
We can ask if the obtained results are typical only for life conditions in Liberecký kraj or if we could consider them to be generally true for all the population of our country. But at the present time we cannot draw such and not even similar conclusions because of the lack of groundwork.

The evaluation of cultural and social possibilities of self-realization in the place of living ended up in total slightly positively which is confirmed by the coefficient value (Z = + 0.222). For nearly one half of respondents

(48.1 %) the possibilities are good, for more than one fourth of them (25.7 %) they are not good. Inhabitants of bigger communities are more satisfied than the inhabitants of smaller ones who are only pleased with the domain of special, casual cultural activities. On the other hand they are more satisfied with "their own" community cultural life (fairs, balls,...) than the inhabitants of bigger communities.

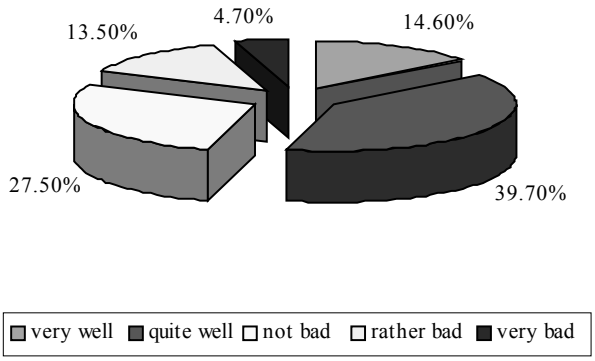
There is only a negligible statistical difference in evaluation by men (Z = +0.258) and women (Z = +0.224). Fig. 4 shows the relative total frequencies of answers.

Fig. 4
Evaluation of cultural and social possibilities of self-realization



Respondents were more satisfied with their possibilities for sport realization in their place of living. The applied coefficient value (Z = +0.360) confirms this result. More than 1/2 of respondents (54.3 %) were satisfied, about 1/6 (18.2 %) unsatisfied. According to the settlement character of Liberecký kraj (domination of smaller communities and communities with less than 10 000 habitants) and to the real condition of spatial and material background of inhabitants' sport realization (results are available in the material "Pasportisation of conditions of physical education and sport in Liberecký kraj") we can affirm that the inhabitants of smaller communities are less demanding than the inhabitants of bigger communities. But we can say at the same time that the frequency of using the sport facilities by different age groups (children, young people and adult social groups) is considerable. Fig. 5 presents general classification of the answers.

Fig. 5
Satisfaction with conditions for sport self-realization



A second classification based on gender showed a statistically very important difference between the satisfaction of women (Z = + 0.49) and men (Z = + 0.306). Women are more often satisfied which is caused by a weaker interest in this kind of activity. It is also caused by their "maternal" way of thinking because women evaluate this problem from the perspective of their children's needs.

CONLUSIONS

1. The respondents were very satisfied with housing (its quality) and they were pleased with the possibilities of spending their leisure time, health, work character and civil freedom.
2. Surprisingly they were not very happy about their personal safety, environment (!), interpersonal relations and social security.
3. The respondents apparently do not see housing as a social process, that is why they did not realize the role of social infrastructure. And it is this problem which bears on the evaluation of the cultural and sport possibilities of self-realization.
4. The results were statistically much more positive for sport possibilities than for cultural and social possibilities.

The presented article has for its object to inform its readers about a small part of the realized survey of the value orientation of the citizens of Liberecký kraj, which represented a fractional analytic groundwork for the elaboration of the conception of physical education and sport development in Liberecký kraj.

There is currently a similar survey just under way within Jihomoravský kraj (Region of South Moravia) and other projects are being prepared also for other regions. The obtained results will be used for a mutual comparison of different regions and for following the general characteristics of the situation within the Czech Republic.

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EMPIRICKÉ ŠETŘENÍ HODNOTOVÉ ORIENTACE OBČANŮ LIBERECKÉHO KRAJE
(Souhrn anglického textu)

Článek informuje o části rozsáhlého výzkumného šetření, které se zabývalo problematikou koncepce a rozvoje tělovýchovy a sportu v Libereckém kraji. Zadavatelem (Radou Libereckého kraje) byl dán požadavek zhodnotit současný stav hodnotové orientace občanů Libereckého kraje ve vztahu ke čtyřem tématickým okruhům:

1. zkvalitňování zdravého životního stylu;
2. úroveň propagace tělovýchovy a sportu v kraji;
3. poptávka po sportovních a tělovýchovných aktivitách (vztah ke sportu);
4. požadavky a očekávání občanů od veřejné správy včetně oblasti podmínek pro tělovýchovu a sport.

Jako základní výzkumná technika byl zpracován list šetření dotazníkového charakteru obsahující 27 otázek a 6 identifikačních znaků převážně demografického charakteru.

Bylo rozesláno 1 500 dotazníků, pro statistické zpracování bylo použito 592 dotazníků. Na jejich vyplňování se podílelo 38,5 % mužů a 61,5 % žen ve věkovém rozpětí od 15 let výše. Z hlediska vzdělanosti tvořilo soubor 36,3 % respondentů se základním vzděláním, 18,1 % vyučených, 37,5 % mělo středoškolské a 8,1 % vysokoškolské vzdělání. V souboru bylo zastoupeno 43 % ekonomicky aktivních respondentů a 57 % ekonomicky neaktivních (studenti, ženy v domácnosti, důchodci, nezaměstnaní).

Výsledky: Respondenti konstatovali velkou spokojenost s bydlením (jeho kvalitou) a projevili spokojenost s možnostmi trávení volného času, se zdravotním stavem, charakterem práce a občanskými svobodami. Poměrně malou míru spokojenosti vyjádřili při hodnocení osobní bezpečnosti, životního prostředí, mezilidských vztahů a sociálních jistot. Hodnocení možností sportovního vyžití v místě bydliště vyznělo statisticky významně lépe než hodnocení možností kulturního a společenského vyžití.

Klíčová slova: společnost, člověk, životní styl, volný čas, zájmy, postoje.

COMPARISON OF GENERAL AND SPECIAL TRAINING INDICATORS OF THE ANNUAL TRAINING CYCLE OF STUDENTS IN FOOTBALL

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The author of the paper compares the special and general indicators of pupils in the one-year training cycle using available literature, research reports and reviews concerning the Slovak Football Association training plans. In the professional methodological publications different values of general training indicators are presented, namely the number of training hours and load hours, which are relatively high. The total volume of load in the experiments reached the bottom limit given by authors of publications. In real football practice the values were higher than those in experiments, except for the number of matches, significant as for the load, however, lower than in the studied literature. Special training analysis has shown that our professional publications did not always react to development tendencies of pupil football in an optimal way. The ratio between the specific and non-specific activities in these publications was 1:1. There are still some shortcomings in the proportionality of parts of the training process. A considerable percentage is devoted to non-specific activities. In experiments the training itself dominates and including activities to improve the tactical and physical qualities of players. Play-oriented training is being preferred, where an important variable is proportionality of playing activities and methodological-organizational activities.

Keywords: General and special training indicators, annual training cycle, parts of the training process, proportionality.

INTRODUCTION

Football has recently been characterised by play dynamisation (Buzek & Psotta, 2000; Korček, 2000). This means that higher requirements are put on players, who have to, in a time and space deficit, demonstrate progressive elements of dynamic technique and variable tactics in individual and collective play activities. To achieve this objective, the players have to be prepared systematically, starting in the pupil age categories.

PROBLEM

Alarming shortcomings in play capabilities of our top players reveal the insufficient effect of the training process. They make us look for new, progressive stimuli, to attract attention to our lagging behind other countries in this sphere. The roots of this situation lie in the essence of the training process for children and youth. As a starting point an analysis of general and special training indicators of pupils in an annual training cycle can be used.

METHODS

For solving questions of general and special training indicators we utilised a content analysis of available literary sources, research reports and review protocols dealing with Slovak Football Association training plans. As for the general training indicators (GTI) we investigated load days (LD), training units (TU) training hours (TH) and number of matches (NM). From among the special training indicators (STI) we selected the proportionality of the play and physical condition training process, proportionality of other parts of the training process, play activities and methodical-organisational forms.

GENERAL TRAINING INDICATORS (GTI)

The obtained GTI are presented in TABLES 1-3. TABLE 1 shows GTI found in professional publications. Entirely identical data in both age categories were found in Matoušek (1985) and Korček (1987). Ondřej (1988) and Kačáni (1989) present different values. In the GTI corpus the most interesting facts were training hours, load hours and regeneration, which are considered as an inseparable part of the training process. The biggest differences were discovered in the number of training and load hours. Kačáni (1989) presents the same values in the category of both younger and older pupils which means that the load volume is not increased, while in publications of other authors a significant load volume increase can be seen. The given GTI values indicate the pressure put on high load volumes, "a habit to work hard". We note that the latest professional publications do not pay attention to GTI.

The real GTI values presented in experimental works are shown in TABLE 2. In the category of younger pupils this problem was investigated by Korček (1994). He presents lower LD and TU values compared to the authors of professional publications. The TH number lies between the data given by Ondřej (1988) and Kačáni (1989). Quite clear are the higher NM

value and lower regeneration values. The trainers did not pay enough attention to regeneration in its various forms. The total load volume reached the bottom limit of values by professional publication authors.

In the category of older pupils, experimental works present various data for, more or less, all training indicators. The most significant differences are in the number of training hours, regeneration and load hours. Compared to professional publications there are some differences as well.

The author of the paper summed up GTI data in football practice based on materials provided by Slovak Football Association and Nemec (2001), TABLE 3. The difference in GTI found in the category younger players in 1987 and 1989 was not very big. However, a remarkable fact was the increase in regeneration hours and the total volume of load hours. Compared to professional publications it can be stated that the clubs managed to keep to volume load indicators. The data from football practice were higher than experimental data, except NM and clearly higher load hours. When looking at TABLE 3 we can see an increase in GTI in the category older pupils in 1989 and a considerable decrease in 2001 except for NM. The trainers often replaced trainings by matches. The comparison of GTI from football practice and those from professional publications showed differences in all indicators, in case of TH and NM in favour of practice, in other indicators in favour of publications. Obviously, the data by Nemec (2001), except NM, have lower values. A similar fact can be observed in relation to GTI in experimental works. The author explains it by specific conditions.

SPECIAL TRAINING INDICATORS (STI)

A progressive approach to the training process underlines specific conditions of pupils' performance development and cultivation of their individual play performance (IPP) and problems of specific activity requirements (Buzek & Procházka, 1999; Korček, 2001). Our professional publications did not always respond in an optimal way to development tendencies in the sphere of pupils' football. The ratio between the specific activities and non-specific ones in these publications is mostly 1:1 (TABLE 4). It is a paradox that Navara et al. (1966), Choutka (1970), Korček (1973) already in the 70s preferred play preparation in pupil categories. In those publications the ratio between the specific activities and non-specific activities is 3:1.

The above discrepancies are removed by the Basic program material by Kačáni et al. (1989):
Younger pupils – drill 60 %, play training 30 %, condition training 10 %.
Older pupils – drill 60 %, play training 30 %, condition training 10 %.

In our opinion, there are still some shortcomings in practice at present concerning the relationship drill – play training – condition training (TABLE 5). The drill in the pupil category must dominate, however, if preferred too much, it becomes an obstacle in performance development in the case of excessive emphasising of skills to the detriment of movement abilities. The drill completes play training, which is connected with the requirement to know the load composition. A considerable percentage of time is devoted to non-specific activities, which are utilised in condition training. This creates the precondition for a versatile movement and energy basis for future play performance.

Experimental works have brought new knowledge into the proportionality of training parts (TABLE 6), which has some consequences in the sphere of management, planning and control of the training. The randomness is removed, the unity of movement abilities and play skills is respected and the whole process is given "an internal interconnection". Play-oriented sports' training is being put in the foreground. In the technology of play-oriented sports training a significant variable is the proportionality of play activities (TABLE 7). Basically, in all quoted publications there is an analogous proportionality of play activities of an individual (PAI) in pupil age categories. It is probably caused by mechanical copying of data from one source into another. To compare the theory and practice we present TABLE 8. It is obvious that PAI preference is determined by the degree of significance the trainers ascribe to play activities, various details, but also the orientation towards individual play performance, although the relationship between the individual and team play performance is very close.

Play-oriented sports training is emphasised also by a significant representation of adequate preparatory games (PG) with a focus on ball handling. The best effect is achieved by the modelling of fragmental match activities of various kinds and importance. The selected play situations must be analogous with real match conditions. That means to select suitable methodical and organisational forms (MOF) (TABLE 9). The above professional publications prefer MOF with a higher degree of complexity. Bigger discrepancies can be found among the authors in the proportionality of preparatory and play exercises, mainly in the category younger pupils. The author of this paper has summarised data on MOF proportionality in practice from the Slovak Football Association materials (TABLE 10). The analysis of training load complexity development made it possible to point at the randomness of the MOF selection by many trainers, without justifying the frequency, proportionality or needs. The higher degree of complexity was often substituted by matches, whereby we are aware of integrity of the match and sports preparation as the key problem of practice. The same problems are prevailing further. Nemec (2001), in the FC Dukla B. Bystrica has found out the following MOF proportionality: PrC – 35 %, PlC – 25 %, PG – 40 %.

In the next part of the paper the characteristics of load complexity in empirical research is presented (TABLE 11). All authors stress the importance of preparatory games. The differences between them were

not substantial. We share the opinion that most MOF can be used for all performance levels, they are mutually irreplaceable. This is why all the forms have to be utilised in training with preference of preparatory and other games.

CONCLUSION

1) General and special training indicators themselves do not guarantee a high level of the training process. However, they can be a significant factor if they are applied creatively in the preparatory, realisation and control phases of the training process, considering the specific conditions of both the team and the individual.
2) In the preparatory phase of the training process the volume proportions among drill, play and condition training sessions must be differentiated. The starting point should be content structure of the play preparation, which is prevention of a dangerous reduction of play activity parameters.
3) In the realisation phase of the training process the load intensity must be checked both in the play and condition training sessions, with the knowledge of the load model in individual MOF, cycles and training units.
4) In the control phase a detailed record of GTI and STI should be kept and the planned activities verified.
5) The training process efficiency, however, will be determined by the trainer's personality and his/her inventiveness.

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POROVNÁNÍ VŠEOBECNÝCH A SPECIÁLNÍCH TRÉNINKOVÝCH UKAZATELŮ V ROČNÍM TRÉNINKOVÉM CYKLU ŽÁKŮ VE FOTBALU

(Souhrn anglického textu)

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Klíčová slova: obecné a specifické tréninkové ukazatele, roční tréninkový cyklus, součásti tréninkového procesu, proporcionalita.

TABLE 1
GTI in professional publications

Age category	Younger pupils							Older pupils						
Indicators	LD	TU	TH	NM	TM	Re	LH	LD	TU	TH	NM	TM	Re	LH
Matoušek, 1985	230	260	–	30	–	40	400	260	290	–	45	–	60	500
	250	280		40		50	480	270	310		55		80	560
Korček, F., 1987	230	260	–	30	–	40	400	260	290	–	45	–	60	500
	250	280		40		50	480	270	310		55		80	560
Ondřej, 1988	230	225	260	35	35	50	460	250	240	280	45	53	80	600
	250	240	280	45	45	60	545	270	250	310	60	80	100	680
Kačáni, 1989	284	260	440	66	99	64	543	284	260	440	66	99	64	543

TABLE 2
GTI in experimental works

Age category	Younger pupils							Older pupils						
Indicators	LD	TU	TH	NM	TM	Re	LH	LD	TU	TH	NM	TM	Re	LH
Peráček, 1989	–	–	–	–	–	–	–	235	269	412	64	74	91	419
Korček,V., 1994	206	162	245	66	58	18	327	235	196	315	60	68	29	414
	227	218	311	74	63	23	374	269	281	379	69	77	37	491
Nemec, 2001	–	–	–	–	–	–	–	288	172	227	100	59	46	332

TABLE 3
GTI in football practice

Age category	Younger pupils							Older pupils						
Indicators	DZ	TJ	TH	PZ	ČZ	RS	HZ	DZ	TJ	TH	PZ	ČZ	RS	HZ
Korček,V., 1987	235	232	348	45	45	30	420	243	250	375	59	9	30	479
	251	250	375	56	56	35	449	260	243	364	62	72	35	438
Korček,V., 1989	247	224	356	44	44	56	454	259	249	373	65	77	70	539
	251	243	364	62	62	51	527	278	276	414	67	78	70	532
Nemec, 2001	–	–	–	–	–	–	–	237	174	226	86	55	54	335

TABLE 4
Proportionality of play and condition training in professional publications

Mode of preparation	Matoušek at al., 1985		Korček & Luknár, 1987		Ondřej, 1988	
	YP	OP	YP	OP	YP	OP
Play training	49.2	51.3	49.2	51.3	53.6	59
	49.4	49.4	49.4	49.4	54.7	63.4
Condition training	50.8	48.7	50.8	48.7	46.4	41
	50.6	50.6	50.6	50.6	45.3	36.6

TABLE 5
Proportionality of training process parts in practice (%)

Training process parts	Korček, 1987		Korček, 1989		Peráček, 1992
	YP	OP	YP	OP	OP
Drill	15–16	14–10	27.1–25.8	27.0–23.7	24
Play training	43–49	47–53	46.8–41.5	43.4–41.6	45.4
Cond. training	42–35	39–39	26.1–32.7	29.6–34.7	31.6

TABLE 6
Proportionality of training process parts in experimental works (%)

Training process parts	Korček (1994)		Nemec (2001)	Pakusza (2002)
	YP	OP	OP	OP
Drill	53–48	45	50	24
Play training	27–32	35–40	31.28	63
Cond. training	20	20–15	18.57	13

TABLE 7
Proportionality of play activities in professional publications in hours

Age category	Younger pupils				Older pupils			
Play activities	PAI	PC	PS	SS	PAI	PC	PS	SS
Matoušek et al., 1985	50	15	–	5	65	30	–	20
	60	25	–	15	–	35	–	25
Ondřej, 1984	40	15	60	–	35	25	60	10
	–	–	–	–	40	20	70	–
Korček & Luknár, 1987	50	15	–	5	65	30	–	20
	60	25	–	15	–	35	–	25
Ondřej, 1988	50	15	70	10	60	20	80	20
	60	20	80	15	50	30	90	–

TABLE 8
Proportionality of play activities in empirical research (%)

Training process parts		Drill				Play training		
Play activities		PAI	PC	PS	SS	PAI	PC	PS
Korček, V., 1989	YP	66.22	23.1	10.68	–	27.8	14.4	57.8
		51.46	30.58	17.96	–	28.1	25.4	46.5
	OP	52.32	28.92	18.76	–	38.16	18.72	43.12
		45.47	36.15	18.38	–	20.96	26.63	52.41
Peráček, 1992	OP	31.65	19.35	15.4	–	46.38	17.88	35.65
		–	–	–	–	–	–	–

TABLE 9
Proportionality MOF in professional publications in %

Age category	Younger pupils			Older pupils		
MOF	PrC	PlC	PG/G	PrC	PlC	PG/G
Ondřej, 1984	25	15	60	30	20	50
Matoušek et al., 1985	30	10	60	35	15	50
Navara et al., 1986	20	30	50	25	25	50
Kačáni et al., 1989	40	10	50	40	10	50
Kačáni & Peráček, 1989	40	10	50	40	10	50

TABLE 10
Proportionality MOF in practice

Age category	Younger pupils		Older pupils	
Training process parts	Drill	Play training	Drill	Play training
PrC	18.12–21.28	16.84–20.30	24.22–19.40	22.32–17.40
PlC	11.42–18.79	10.32–19.97	12.24–18.34	12.89–18.43
PG	30.16–29.31	31.40–28.74	34.37–27.75	35.08–27.86
G	40.46–30.62	41.43–30.99	29.17–34.51	29.71–36.31
PG+G	70.46–59.93	72.83–59.73	63.54–62.26	64.79–64.17

TABLE 11
Proportionality MOF in empirical research

Age category	Younger pupils						Older pupils					
Training process parts	Drill			Play training			Drill			Play training		
MOF	PrC	PlC	PG	PrC	PlC	PG	PrC	PlC	PG	PrC	PlC	PG
Peráček, 1992	–	–	–	–	–	–	30.3	23.7	46	31.6	23.9	44.5
Korček, 1994	30	11	59	29	12	59	26	26	48	25	25	50
	32	13	55	31	15	54	29	21	50	22	26	52

SPORT ACTIVITIES AND SMOKING HABITS AMONG THE YOUTH IN SLOVENIA

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The aim of this research project is to establish whether primary and secondary school children active in sports, based on studying 379 primary and secondary school children from Ljubljana. For research purposes, a questionnaire including 42 variables has been used. All variables have been "crossed" with the criterion variable "How many hours per week do you practice sport, including PE lessons?" The research results analysis has shown that in primary schools 12.9 % of males and 10.9 % of females smoke, and in secondary schools 14.6 % of males and 11.2 % of females smoke. On average, primary school children started smoking when they were 12, secondary school children when they were 13 years old. Concern for their health is the main reason why the majority of children do not smoke and the reason why these children are active in sports. Among those active in sports, there are more secondary than primary school children. Primary school children mostly practice sport competitively, while the secondary school children rather practice sport recreationally. Children who come from non-smoking families (i.e. the parents do not smoke) are usually more actively involved in sport activities than those children who come from smoking families. There are though not many parents who are also active in sports, but still most of them do encourage their children to practice sport. Even though the results of crossing those variables connected with sport activity with those variables connected with smoking wasn't statistically important, still important and interesting findings can be concluded based on the collected results. In order to decrease smoking habits among youth, various additional activities would have to be made available to them; activities which would interest them on one hand, and on the other hand, be available to them in their spare time. And sport activities certainly find their place in both categories.

Keywords: Sport activity, smoking, primary and secondary school children, Slovenia.

INTRODUCTION

There are very few bad human habits which are so devastating on one hand, but could be prevented on the other hand (Kopriva, 2002, 4). Smoking tobacco and tobacco products has, at the present time, become the most widespread way of abusing psycho-affecting substances. Authors estimate (Primic Žakelj, 2002, 2) that over 100 million people have died because of smoking in the 20th century. If the number of people smoking does not drop, the number of smoking related deaths will grow to 10 million a year by the year 2020. Lung cancer, which is most commonly caused by smoking (it represents 90 % of all risks with men), is still the most common type of cancer men suffer from all around the world including Slovenia. Besides many cancer types (lung, oropharyngeal, oral cavity, urinary bladder, liver, etc.), the most frequent diseases caused by smoking are heart and coronary disorders, lung diseases, and ulcers of the stomach and duodenum.

The research by Kopriva (2002) indicates that 4/5 of children who have been treated at the lung-diseases department of the children's hospital come from 'smoking' families. This unquestionably indicates that even just an exposure to tobacco smoke in a room (passive smoking) represents an important risk factor, which increases the possibility of respiratory organ disorders with children. Each individual though has every right to endanger his/her own life; on one hand, non-smokers should mutually accept the smokers, for they have every right to destroying their own lives. On the other hand however, most recent research shows that passive smoking is even more harmful and damaging than active. This conveys that even the most addicted and passionate smoker has absolutely no right to endanger the health and life of a non-smoker (Stergar, 2000a, 14).

In 1999, 4403 men and 4240 women in Slovenia suffered from cancer, among which 42 % (men) and 16 % (women) cases were related to smoking (Primic Žakelj, 2002, 2). The occurrence of lung cancer has however become steady – as compared to the year 1998 – which can be related to the increasing number of men giving up smoking after the age of 40. Even though the statistical data shows that since 1990 the number of smokers is decreasing (approximately 25 % of the entire population smokes, in 1990 the percentage was 40 %), the following two findings are most worrying. First is that the number of female smokers is increasing. The number of female smokers is almost the same as the number of male smokers; in 1975, only 27 % of all smokers were female. And the second is that smoking among high school students is increasing (Turk, 2000, 2). The results of health and health care research (International Day without a Ciga-

rette of UICC, 2002) indicate that more than a third of women and men less than 30 years of age smoke or have declared themselves to be smokers.

Far too little attention is paid to the problem of smoking, particularly to smoking among youth. We are not well aware that smoking becomes a habit gradually. Young people gradually go through the stages of trying, occasional smoking to regular smoking. The number of occasional smokers (weekend) to regular (every day) smokers is gradually increasing after 10 years of age.

Young people are connected to other people in a number of ways. They are continuously influenced by other people's expectations, archetypes, values, orders and prohibitions, which in many cases contradict each other. It is their basic needs and motives of their developing personality, which influence which archetypes to accept, which expectations to meet, and which orders and prohibitions to obey. Young people who smoke are rarely found among groups of people who reject smoking for their social interests and goals (Debeljak & Kalan, 1987, 55).

Undoubtedly, sport activities represent an important factor in preventing smoking. Most people who smoke start smoking at an early age and become addicted easily. Therefore, it is important to offer young people a number of various healthy activities, among which sports activities undoubtedly belong as well (Shapiro, 1994, 23).

Specifically, appropriate sport activities can most efficiently restrain smoking attempts, where on the other hand, wandering and strolling around with friends can only accelerate the progress of this bad habit. The life style of living healthy represents a very important aspect in education, which begins at home and continues in kindergarten, school and later becomes self-education. The problem of smoking among young people should not be treated as a sole problem, but rather in the scope of caring for young people in general.

This research is based on a questionnaire, which was first developed for this type of research by Debeljak and Kalan (1987). The questionnaire has further been enhanced for the purpose of this particular research. With the questionnaire, we wanted to analyze the following: sport activity among young people, smoking habits, and relations between sport activity and smoking.

METHODS

Profile of Subjects

The sample of subjects studied here includes 13-year-old children – 101 females and 62 males from four primary schools in Ljubljana, and 15-year-old children – 134 females and 82 males from four secondary schools in Ljubljana.

Sample of Variables

This research is based on a questionnaire developed for research by Debeljak and Kalan (1987). It includes 41 questions on sport and smoking habits:

- Have you ever smoked?
- How long have you been smoking?
- If you already smoke, how old were you when you started?
- Why did you try smoking then?
- If you have already smoke, have you tried to quit?
- Why have you tried to give up smoking?
- If you do not smoke now, why not?
- If you smoke, how often do you smoke and how many cigarettes do you smoke?
- Would you like to quit smoking?
- When do you smoke the most?
- Is smoking allowed at your school?
- Where at school do you smoke?
- What is your opinion about smoking at school?
- Are there more boys or girls among smokers?
- Do your friends find that you spend most of your time smoking?
- How would your friends react if you started smoking?
- Would you like that your boyfriend or girlfriend smokes?
- Do your parents smoke?
- Do your parents know about your smoking?
- How did your parents react, when they realized that you smoke?
- Do any of your brothers or sisters smoke?
- Are your parents divorced?
- Do you feel lonely?
- Do you think smoking is harmful to your health?
- Have you ever read about how damaging smoking can be?
- In what form would you like to receive information about smoking?
- How many hours per week are you active in sports, including sport education classes at school?
- In what kind of sport are you engaged in your spare time?
- State the form of your sport involvement!
- Why do you take part in sports activities?
- Why are you not involved in sports?
- What are your best sport achievements?
- Do you smoke before a training or sports activity?
- Do you smoke after a training or sports activity?
- Does a coach or a teacher in the sports club or association allow smoking?
- Does the trainer smoke?
- Does the teacher of sports education smoke?
- Have you noticed a decrease of physical efficiency due to smoking?
- Do you think that top results in sports are possible also in the case of a smoking athlete?
- Would you give up smoking if you were sure that your sports results were worse because of smoking?
- Are your parents active in sports?
- Do your parents suggest to you that you should be active in sports?

Data Collection

In the year 2000, children included in this research answered our questionnaire. Schools were randomly selected. The questionnaire was first introduced to PE teachers from selected schools. Conducted by their PE teachers, children have answered the questions during PE lessons.

Data Processing Methods

Data was processed at a computer data processing department, Faculty of Sport, Ljubljana. For this purpose, the SPSS software package was used. Frequency and Contingency tables have been generated with the help of FREQUENCY and CROSSTABS sub-programs. Probability relations among the variables have been tested by the Hi-squared method.

RESULTS

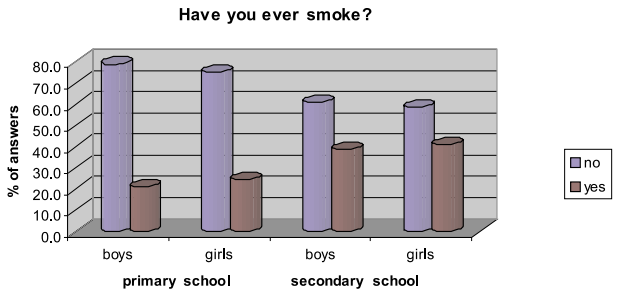
The purpose of this research is to determine whether there is any relation between sport activity and smoking habits among youth. We wanted to determine whether school children that are active in sports smoke. In this article only the most important answers were interpreted.

Pupils have been divided into three groups based on their smoking status: a group where pupils regularly smoke, a group of non smokers and a group where pupils only attempted to smoke.

Based on their answers pupils active in sport were defined as pupils who regularly practice six times a week including PE lessons.

The research indicates that 21 % of male and 24.8 % of female primary school pupils have attempted to smoke (Fig. 1). The percentage is slightly lower when compared to Debeljak and Kalan's (1987) research. In their 1987 research, a little over 30 % of children attempted to smoke. The percentages for secondary school males and female pupils who have attempted to smoke are much higher though –39 % for male and 41 % for females (Fig. 1).

Fig. 1



In primary school, 12.9 % of males and 10.9 % females smoke, and in the secondary school, 14.6 % males and 11.2 % of females smoke regularly. On average, primary school children have started smoking at the age of 12 and secondary school children have started smoking at the age of 13. In 1987, 9 % of males and 14 % of females smoked. Then, the first real smoking attempts were noticed at the age of 13 with females and at the age of 10 with males.

Crossing of the variable "How many hours per week do you practice sport, including PE lessons?" with other variables has shown though that relations are not statistically characteristic, yet important and interesting findings can be concluded based on the collected results.

The amount of smoked cigarettes varies among pupils and has no correlation with the amount of sport activity. Most children smoke on special occasions only. Females who smoke on special occasions only are more active in sport than those who smoke more.

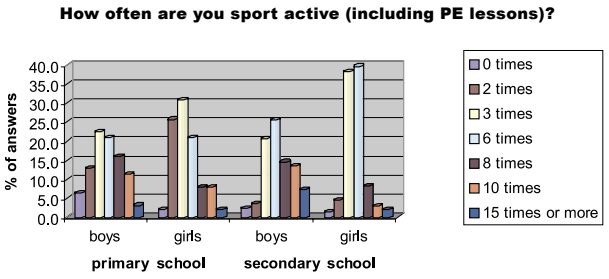
More than 50 % of primary school and 40 % of secondary school children who smoke would like to give up smoking. Less than 30 % of primary school and 40 % of secondary school children who smoke, have not yet thought about giving up smoking.

Of primary school children 71 % (among which the females prevail) and 68 % of secondary school children who have smoked have already given up smoking.

As stated by the children, the reason why they tried to stop or have stopped smoking is because smoking is bad for one's physical shape and state of health. For the same reason, most of the questioned children do not smoke and think that smoking is bad for your health. Similar results were obtained almost 15 years ago in Debeljak and Kalan's (1987) research.

In primary school, 85 % of males and 77 % of females, and in the secondary school, 91 % of males and 81 % of females are active in sports (Fig. 2).

Fig. 2



Primary school males mostly practice sport competitively, while the primary school females and secondary school males and females practice sport recreationally and irregularly. Males mostly practice football, basketball, and cycling, whereas primary school females mostly practice volleyball, basketball, and dance, and secondary school females practice general aerobics, cycling, and basketball. Results of research done in 1987 also show that more primary school males (90 %) than females (78 %) were active in sports. Then, males most-

ly practiced basketball and football, whereas females mostly practiced volleyball, running, and tennis.

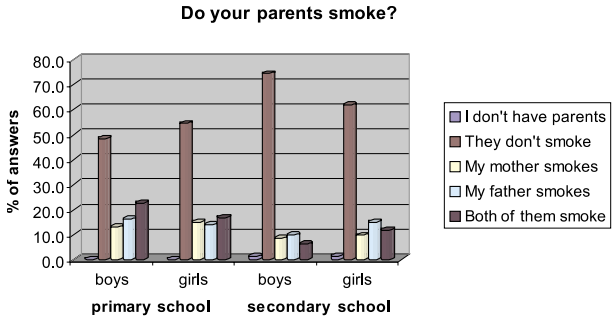
Young people are aware that health represents a value, which has to be respected and nourished. They are also very well aware of the correlation between sport and health. In spite of that, 10 % of athletes in primary schools smoke, which is slightly less though than 15 years ago (15 %), and 18 % of athletes in secondary schools smoke. These primary school children however do not smoke before or after a practice. However, some secondary school children smoke before or after a practice. Most coaches do not allow smoking, but unfortunately some of them still represent bad examples (the situation of smoking among coaches has however improved since 1987). The same conditions can be observed among PE teachers.

Regarding the influence of society, the following can be ascertained. Children who come from non-smoking families (i.e. parents do not smoke) are usually more actively involved in sport activities than those pupils who come from smoking families. We can also ascertain that almost all primary and secondary school children, whose brothers or sisters smoke, smoke as well.

DISCUSSION

Even though not many parents are sports active, most of them encourage their children to practice some sport (90 %). Since the research results indicate that encouragement within the family positively influences sport activity, it would be necessary to consider and motivate parents in that respect as well. Parents should become examples for their children regarding sport activity as well as regarding smoking and other bad habits (Fig. 3).

Fig. 3



Therefore, it is not enough to educate children only. We need to educate parents as well who are obviously not aware of their parental duties, nor of the consequences that inappropriate education and bad examples can have. Not only that passive smoking increases the risk of asthma or other lung diseases and healthy children grow up having a smaller lung capacity when they grow older. The results of lung capacity measurements with young athletes are significantly lower among those who come from a smoking environment (Kopriva, 2002, 3).

And what does the school system do in the area of preventing smoking? In addition to what is stated in the curriculum, not many teachers do include the subject of smoking and its harmfulness during their lessons. Do they know too little about it? Unfortunately, this is rather true. Besides, they themselves are the "prey" of the bad habit and thus cannot be the children's good examples. In primary schools, there are a lot of PE teachers about whom children know for certain that they smoke (Fig. 3). Many coaches smoke, too (Fig. 4). We can only guess how many PE teachers and coaches smoke about whom children or we do not even know. We can only assume that the above percentages are higher. The school system, which prohibits smoking in and around their institutions achieves only that. It has no influence whatsoever on what is happening in people's spare time. We can only ascertain that the percentages mentioned here are even higher.

Fig. 4

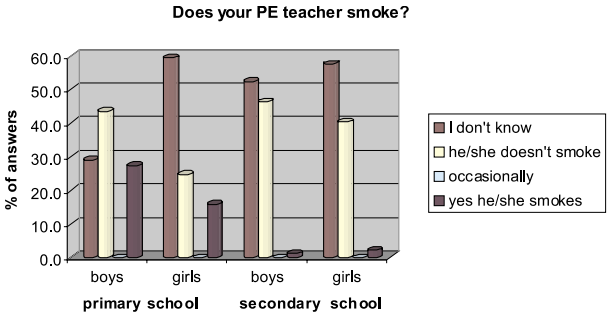
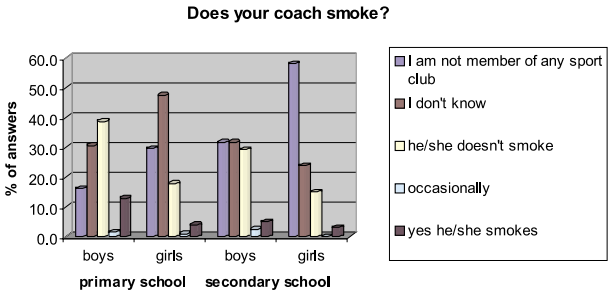


Fig. 5



Based on observing the 'Law for the limited use of tobacco products', supervised by the health care inspectorate in the period 1997–2001, 2167 checkups have been carried out in primary schools and only 372 in secondary schools (Turk, 2002, 3). The results or measures taken afterwards have been as follows. In primary schools, 39 written orders, 8 fines and not even one felony has been reported. In secondary schools, 6 written orders, 12 fines, and 3 felonies have been reported (Turk, 2002, 3). The school and legal systems prohibit smoking in and around their institutions; however, they have no influence whatsoever as to what is happening in the after-school hours.

"Sport without cigarettes" should become a rule and a part of the moral of all who practice sport (Eysenck, 1991, 21). A lot of attention is devoted to achieving a better physical shape, to which the problem of smok-

ing is also related. Most convincing are also the medical reasons for not smoking and the reasons pertaining to one's general appearance. There is probably no boy who would not want to be liked by others or himself based on the way he looks. A tall figure, broad shoulders, large chest – this is the image almost every young boy dreams about. Scientists have however proved that smoking at an early age impedes physical development and growth. It has been proven that individuals who started smoking early have a smaller lung volume than non-smokers. The effects of smoking are thus just the opposite of what young people would like to achieve. The behavior of young girls is even less understandable when they want to prove their equality to boys by having a cigarette in their mouths. Abusing their own health, having stinky clothes and hair, bad breath – all of these are the characteristics men least expect from an attractive young woman. Everybody fighting against smoking should take advantage of these facts, because young people can massively be motivated and gained for sport.

CONCLUSIONS

Even though the results of crossing variables connected with sport activity with variables connected with smoking wasn't statistically important, yet important and interesting findings can be concluded based on the collected results.

Care for health is the main reason why the majority of pupils do not smoke and the reason why these pupils are active in sports. Male pupils mostly practise sport competitively, while female pupils practise sport recreationally and irregularly. Pupils who come from non-smoking families (i.e. parents do not smoke) are usually more actively involved in sport activities than those pupils who come from smoking families. There are though not many parents who are also active in sports, but still most of them do encourage their children to practice sport.

In order to decrease smoking habits among the youth, various additional activities would have to be made available to them; activities that would interest them on one hand, and on the other hand, be available to them in their spare time. And sport activities certainly find a place among these.

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SPORTOVNÍ AKTIVITY A ZLOZVYK KOUŘENÍ U MLÁDEŽE VE SLOVINSKU

(Souhrn anglického textu)

Cílem tohoto výzkumu je zjistit, zda žáci na základní a střední škole, kteří aktivně provozují sport, kouří. Tento výzkum je založen na studii 379 žáků základních a středních škol z Ljubljany. Pro účely výzkumu byl použit dotazník, který obsahoval 42 proměnných. Všechny proměnné byly kříženy podle měřicí proměnné „Kolik hodin týdně sportuješ včetně hodin tělesné výchovy?“

Výsledky výzkumné analýzy ukazují, že na základní škole kouří 12,9 % chlapců a 10,9 % dívek, na střední škole kouří 14,6 % chlapců a 11,2 % dívek. Průměrně žáci základní školy začali kouřit ve věku 12 let, studenti na střední škole začali kouřit ve věku 13 let. Starost o zdraví je hlavní důvod, proč většina dětí nekouří a důvod, proč tyto děti provozují aktivně sport. Mezi těmi, kteří aktivně sportují, je více studentů ze střední školy než základní. Žáci základní školy většinou sportují závodně, zatímco studenti střední školy raději provozují sport rekreačně. Děti, které pocházejí z nekuřáckých rodin (např. rodiče, kteří nekouří), jsou obvykle více aktivně zapojeny do sportovních aktivit než ty děti, které pocházejí z kuřáckých rodin. I když není mnoho rodičů, kteří aktivně sportují, většina z nich podporuje své děti ve sportování.

Přestože výsledky křížení proměnných spojených se sportovní činností s proměnnými spojenými s kouřením nebyly statisticky významné, lze vyvodit důležité a zajímavé závěry na základě shromážděných výsledků.

Aby se snížil zlozvyk kouření mezi mládeží, musí být vytvořeny dostupné doplňkové aktivity; aktivity, které by byly pro školní mládež zajímavé a ve volném čase dostupné. Sportovní aktivity mezi ně určitě patří.

Klíčová slova: sportovní aktivity, kouření, žáci základní a střední školy, Slovinsko.

PERCEPTION OF SPORT-BASED MORAL VALUES IN POLISH PUPILS AGED 12–16

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Moral values are shaped in the early years of personal development through contacts and influences of key factors: parental up-bringing, teachers as role models, peer interaction and the church. Recently we can observe a big influence of the media "telling" our youth what to do and in what manner. Polish youth seems to represent a group acknowledging "flexible" responsibility. In this article, the author wanted to examine the influence of the media on the hierarchy of socio-cultural values among Polish youth in the last decade, a period of political transformation in Poland. Numerous studies presented by various Polish researchers prove that there are possible connections between the amount of time teenagers spend in front of the TV set and the loss of the ability to recognize and evaluate moral problems. Results of the research presented in the article will lead, in the conclusion, to suggestions for positive enhancement of specially designed moral education programs and indicate the need to introduce such programs into schools.

Keywords: Youth, level of social and moral development.

INTRODUCTION

The cultural identity of Polish youth during the transitional decade period of the years 1990–2000 in Poland, according to Zamojska (1998), shows significant differences between the values young people declare and those they actually perform in their lives. Her research proves that today's teenagers are not radical nor rebellious, they are just more concentrated on personal things, and in the process of being influenced by the world of media such as television and recently Internet (globalization is a side-effect here), they have turned from being creators of cultural values into passive users of readymade "mass-culture". This world without a clear hierarchy of moral values being presented to teenagers by media becomes a "model to follow", but the media creates a false vision of the world – mass publicity brings sponsors and sponsors bring money (commercialization is a side-effect here). Sport plays a major role in media marketing, but it has become a simple economic-based business and therefore, as with all other marketing goods, sports events need to produce profits. Sports competitors are no longer expected to play for the pleasure of the game itself, they play to win and side pressures from interested parties (business groups) and the costs of "investment" in the achievement of final success very often become a cause of the "win at all costs syndrome", winning not for the glory of the sports competitors, but for the profit of somebody else – a company, individual sponsors or sometimes for the city – whoever pays more.

In research led by WHO in the final report on Poland, Woynarowska (2000) states that 41 % of the boys and 28 % of the girls studied spent 4h a day watching television and/or more or less the same amount of time playing computer games. Similar findings have been reported by Bronikowski (2001) and Szeklicki (1997).

Before undertaking the work that follows, the assumption was made that such a huge amount of time spent as passive sports participants in front of the television would shape the hierarchy of their moral values. In this article the influence of the sport media on the hierarchy of Polish teenagers' moral values will be examined.

REVIEW OF RESEARCH ON THE LEVEL OF PERCEPTION OF MORAL VALUES OF POLISH PUPILS AGED 12–16

The degradation of moral values observed recently in most spheres of human life has emerged mainly due to rapid changes in modern societies causing new tensions (between both nations and individuals). This came with a loss of moral authority in the family, school and church and has been transferred to our culturally and socially passive youth through the most powerful source – the media, with unexpected side-effects.

Foreign research on the status of physical education done by Hardman and Marshall (1999) indicated that the time in school curricula devoted to physical education has been drastically reduced in recent years in most countries.

The biggest amount of time for physical activity is given to school pupils aged 10–12 and the least in the final years of schooling, when this subject becomes facultative or even optional. In Sweden and Finland there are 3 hours, in England and Wales, where the subject is supposed to be obligatory for pupils aged 5–16, the time has been reduced in 75 % of the schools, and pupils over 14 have only 2 hours of it per week (Hardman

& Marshall, 1999). In Poland there are 3–4 hours of physical education a week. Such insufficient time is not enough, neither for developing pupils' biological needs nor for their general humanistic development. The results of limited time for wholesome development through physical means is visible in the (mis)behaviour of youth.

In foreign research on the moral development of youth Gibbons, Ebbec and Weiss (1995) found that the level of moral development of Canadian pupils was insufficient. They followed it with an experimental intervention program of moral education called *Fair Play for Kids*. The findings proved that such programs enhance the sociomoral development of school children. Similar conclusions have been found by Miller, Bredemeier and Shileds (1997) in American schools.

In Poland in the research project led by Żukowski (1996) it appeared that 80 % of the examined Polish youth proved to be "flexible" in sporting as well as in social life situations. The same youth, 70 %, treated the problem of responsibility in a very instrumental way, interpreting it according to their own needs and possible benefits, which was recognized as "moral relativism". Umiastowska (1999) presented interesting findings from her research, in which 50 % of the examined youth, aged 12 and 15, declared that they were ready to accept (even use) doping and breaking the rules if they could only win an Olympic medal. On the other hand, in another research project led by Derbich, 30 % of youth believed in fair play in sport and 15 % thought that sport was about honesty. However, the same youth says that such sport, formed and de-formed by media, isolates individuals (13 %), deprives them of moral values (10 %), de-organizes their personal lives (26 %) and glorifies only the best and eliminates the weakest (28 %) (Derbich, 1993).

Similar research was undertaken by Bronikowski in the year 2000 on a group of 440 pupils aged 13 from Poznań secondary schools. The level of moral consciousness concerning Pierre de Coubertin's vision of no-Olympism was generally low among Polish youth in most examined groups and it was especially seen in statistically significant differences between declared and represented attitudes in sporting situations. It was found that there was a statistically significant difference between declared opinions and intentions of behavior in sporting situations. An analysis of the results showed that 68 % of the girls and 58 % of the boys believed that arguing during physical education classes was not fair, but still 55 % of the girls and 62 % of the boys declared that they would be arguing anyway if such a situation should happen. In answering the question "When you lose games in P.E. classes, you wonder whether to complain" 59 % of the girls and 45 % of the boys said it was not fair but 43 % of the girls and 34 % of the boys agreed they would complain or dispute the referee's decision to justify their loss in a game. Girls declared they didn't want to share the game and equipment with weaker team-mates – 65 %, while in the same group 80 % of the girls were sure that such behavior was far beyond correct. In a question about the rules of a game 80 % of the girls and 55 % of the boys agreed that disobeying the rules was not fair, but still 67 % of the girls and 35 % of the boys declared they would disobey the rules if this could only help them to win in a future situation. Such moral reasoning among youth comes as no surprise since 55 % of the examined boys and 43 % of the girls aged 13 could not give a proper explanation of "fair play" and this term was not associated with the Olympic Games nor with the Olympic Movement (Bronikowski, 2002).

Karolczak-Biernacka (1999) in a study carried out among secondary school pupils and young sports players pointed at "rivalry" and "winning" as the most valuable factors in the examined group. This group of teenagers also believed that "real sportsmanship" was about cheerful and fair play. In a research project led in Sport Mastery School, in Poznań on almost 400 pupils, the examination of the moral development of pupils 15-16 years old showed a very low, unsatisfactory level of moral reasoning. In the case of a specific group of pupil-athletes, Guszkowska (1996) sees a possible reason for moral underdevelopment in the constant need to combine a hard, sometimes very rigid training process with a stressful education, which results in tensions and conflicts, especially in the years of puberty. However, in the same school an experimental intervention project based on Olympic ideals caused statistically significant changes in moral development between control and experimental classes (Bronikowski, 2001). Similar conclusions come from an experimental project undertaken by Nowocień (2001) in primary schools. Both experimental designs supported the earlier hypothesis of the positive influence of moral education programs (for example Olympic Education programs) on the moral development of school youth.

In a group of disabled pupils the problem of moral values needs to be considered separately. It was 88 % of examined disabled pupils who strongly believed that we should not accept unfair behavior or disobeying the rules in sport, and playing fair is important on all the levels of sporting competitions for 92 % of the pupils. Also a vision of winning an Olympic medal is not worth cheating and using doping for 82 % of the pupils. Disabled pupils consider sport as a way to personal development (77 %) and collective work (80 %) and mutual understanding (70 %) are the most valuable features of sport for them. Sport also helps people to be more open-minded, believed 77 % of the examined disabled pupils (Biniakiewicz, 1999, 2001).

The above mentioned findings from various research projects indicate the very low effectiveness of school education regarding sociomoral goals. To be effective in the domain of moral development, school programs have to consider Rest's model of moral processing (1984), which includes four major stages: perception, judgment, choice and implementation and design programs including moral intervention strategies.

DISCUSSION

Conclusions of different research and study programs indicate that neither sport nor culture have managed to propose new "role models", which would re-place the so-called "lost authority". Today's mass-culture has drastically decreased the quality of the culture provided to passive youth to adjust it to their intellectual capacity. A range of old-fashioned pedagogical tools inadequate to youth's needs makes the matter worse. Still, the domain of physical activity seems to be one of the most important and most influential fields for sociomoral education, due to its publicity, as all activities take place in an easily observable social context. According to Anderson (1999), the starting point for reflection by teachers about pupils' behavior in sporting situations should have three levels:

1) The pedagogical and curriculum means used to attain education aims;
2) The underlying assumptions and consequences of pedagogical action;
3) The moral implications of pedagogical actions and the structure of schooling.

Żukowska (1992) says that there is a method of promoting positive moral values in youth, namely Olympic education. Based on truly Olympic principles: respect for others and their work, religion, race; mass participation, exchange of cultures and traditions could be an attractive form of preparing the society for intellectual perception of the biggest world event – Olympic Games – combining sport and culture.

Various research projects on the perception of social and cultural values among Polish youth prove that the most powerful source of influence – the media, does not fulfill its educational role (neither do parents nor school). Results show how deep the influence can be. Since there is no clear hierarchy of moral values, more teenagers now then ever don't see anything wrong with changing their attitude depending on the situation, moral relativism becomes the rule and not an exception.

A few years ago Canadians faced a real crisis situation when the idol of all teenagers, sprinter Ben Jonhson, was caught cheating by doping and was banned for 2 years. Only strict and fast reaction could stop the process of moral degradation – Canadian government introduced a law according to which all television commentators during sport relations had to pay more (at least equal) attention to the beauty of sport movement and its socio-cultural connotations, trying to persuade TV spectators that "not the result but participation matters the most". How many other governments have undertaken similar actions?

Comparable research on moral issues done by Dubois (after Shields & Bredemeier, 1995) in longitudinal studies on American youth proved that participation in well-organized sport activities positively develops the moral abilities of youth. Shields and Bredemeier (1995) have concentrated on differences between sport pupils against non-sport pupils. The findings led to a conclusion of significantly slower moral (and social) development of students playing in a university basketball team compared to students whose only activity was limited to participation in physical education classes. However, such association was not found in the case of secondary school pupils. Another finding from that research project pointed at a correlation between the length (in years) of training in Mortal Combats and Martial Arts with significantly slower moral development, which determines the level of aggression. Therefore we can conclude that moral development is associated with the personality of an individual as much as with the level of education, social and cultural environment (school, peer to peer interactions, club-coach factors), finally with the sport discipline and the sporting level of a trainee. But the most influential factor seems to be – the media.

Further degradation of moral values in sport leads to its total break down. With no-two-ways infiltration from sport to other spheres of life and backwards, cheating, the least effort and ratio of financial input to possible benefits became the best way of achieving a final success by any means.

Are we about to stop using in our language the term "fair play" in life? I hope that a code of a certain type of behavior in a rivalry, originating back in the Middle Ages or even in earlier Ancient times, is so strongly rooted in human nature that we will not lose it. Greek "arête" was a way of living, which led to the development of Ancient civilization, resulting in philosophers, politicians and athletes. "Fir for" was a Celtic code, regulating behavior in numerous fights of medieval knights, helping to organize life in such "morally dark" ages. Centuries passed and we still recognize and respect behavior which stands beyond the technical regulations of the game – those sports players who merit a victory in a game of equal chances, who would rather help the opponent than win without a fight are still awarded a prize – not a financial one, but a prize of honor – the Fair Play Award. It is now up to the media to undertake the task of making such occasions "worth" their TV broadcasting time and to show to the viewers that this is something what we should expect from athletes at all levels. In order to have a society well educated in the area of physical culture, national television has to participate in the process of the education of children, parents, politicians, sport journalists and the sports players themselves. Luckily, Polish television has recently begun a set of Olympic programs promoting the ideals of Olympism, easy to understand for youth and interesting enough to inspire their parents. Another way of societal moral growth seems to be the introduction to schools of specially designed moral education programs, which proved, in the above cited experimental school interventions projects, to have a significant positive influence.

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VNÍMÁNÍ MORÁLNÍCH HODNOT ZALOŽENÝCH NA SPORTU U 12–16LETÝCH POLSKÝCH ŽÁKŮ

(Souhrn anglického textu)

Morální hodnoty mládeže jsou formovány již v raném věku vývoje jedince kontaktem a vlivem klíčových faktorů: rodičovská výchova, učitelský vzor, interakce vrstevníků, církev. V poslední době můžeme sledovat velký vliv médií, která mládeži říkají, co dělat a jakým způsobem. Zdá se, že polská mládež reprezentuje skupinu flexibilní zodpovědnosti.

V tomto příspěvku autor chtěl zjistit vliv médií na žebříček sociálně-kulturních hodnot mezi polskou mládeží v posledním desetiletí v období politických změn v Polsku. Četné studie, které předložili různí polští výzkumní pracovníci, dokazují, že existuje možné spojení mezi časem, který mládež tráví sledováním televize, a ztrátou jejich schopností rozpoznat a zhodnotit morální problémy.

Výsledky výzkumů, které jsou předloženy v příspěvku, vedou k závěru, že speciálně vytvořené morálně výchovné programy by přinesly zlepšení, a poukazují na potřebu zavést tyto programy do škol.

Klíčová slova: mládež, úroveň sociálního a morálního rozvoje.

THE STUDY OF THE BODY'S CENTER OF GRAVITY IN SHOT-PUTTERS

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The aim of this study was to find some limiting factors in the performance of shot putting with an emphasis on the kinematic parameters of the center of gravity. We used a noninvasive kinematographic method, which enabled us to perform a 3-D analysis of the movements of different athletes. On the basis of this study, factors of performance were determined (as opposed to the factors resulting from the formula for the distance of oblique throwing) and also the speed of the body's center of gravity and extension of movement in a vertical line. Our results should lead to the optimization of training processes.

Keywords: 3-D video-analysis, trajectory, speed, and acceleration.

INTRODUCTION

The shot put belongs among those athletic disciplines, in which explosive strength ability is highly exerted. One of the limiting factors is the technique of each certain style. According to the formula for an oblique shot put

$$L = \frac{v_0^2 . \cos\alpha}{g} . \left(\sin\alpha + \sqrt{\sin^2\alpha + \frac{2gh}{v_0^2}} \right)$$

the main influence on performance is had by, above all, the shot put height, shot put angle, and shot put speed. Vindušková, Kaplan and Metelková (1998) say that among the most frequent mistakes in shot-putting are the dropping elbow, a break in the center of the body, and the trunk bending sideways during shot-putting. In addition to these limiting factors of performance we also focused on monitoring of the trajectory, speed and acceleration of the body's center of gravity, because these kinematic parameters seem to us to be limiting factors for performance as well. According to available sources, 3-D video-analysis has been used for similar measuring, for example during the Olympic Games by Komi and Mero (1994) on javelin throwing, and by Gregor, Whiting and McCoy (1994) to analyze discus throwing. We used their experience in our analysis of shot putting, when we supposed that the center of gravity of the bodies of more efficient athletes moves at a higher speed, and with a higher acceleration. Furthermore we supposed that the center of gravity of the bodies of more efficient athletes moves to a greater extent in a vertical line than in less efficient athletes. Along with this statement we did not suppose a great difference among athletes in the movement of their bodies' centers of gravity in a horizontal line.

METHODS

This analysis of shot putting was made during a local championship of the Liberec region in May 2002. Ten athletes of different performance levels were filmed during their four attempts (the max. performance was 17.80 meters and the min. performance was 12.20 meters). For the kinematographic video-analysis we used two digital cameras JVC 357 DVL with a frequency of 25 Hz, which were located in such a way that the optical axes formed an angle of about 100°. The space in which athletes moved was calibrated using a calibration cube (1m × 1m × 1m). The resulting video recording was analyzed using software SIMI Motion 3D, which provides a 3-dimensional view of selected movement activity. According to Novotný and Stromšík (1999) among the main sources of mistakes are mistakes by the interpreter, mistakes caused by the environment and mistakes in the system. Cameras shot a stage which was 3.5 meters wide. Resolution was standard – 768 × 576 points. One pixel corresponded to 0.5 centimeter. The axial system is shown in Fig. 1. A total of 15 points were digitized (Fig. 2) for each exposure (the head, left-L/right-R shoulder, L/R elbow, L/R wrist, L/R hip, L/R ankle, L/R knee, L/R tip of the feet), and for these points spatial coordinates, speeds, and acceleration were calculated using this software. For the calculation of the body's center of gravity, we used one of the offered models of this software, Hanavan, put out in 14 segments.

We focused mainly on the monitoring of movement of each athlete's bodily center of gravity, and the speed thereof in three-dimensional plates and on acceleration. Instead of kinematic parameters relating to the body's center of gravity, we monitored the shot put angle, shot put height and shot put speed. According to the formula for the oblique shot put, these three factors are limiting factors of performance in shot putting.

Fig. 1
Utilised axial system

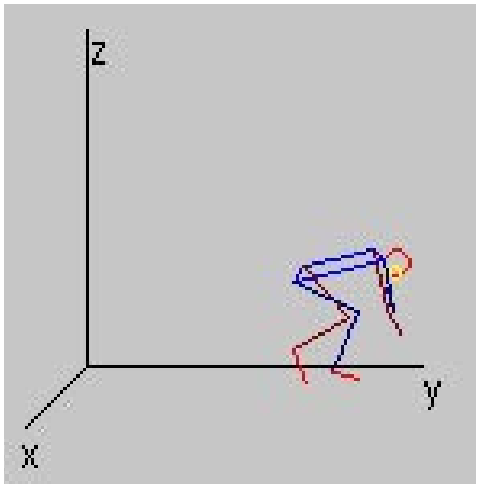


Fig. 2
Digitization of detailed points during shot-putting – more efficient athlete

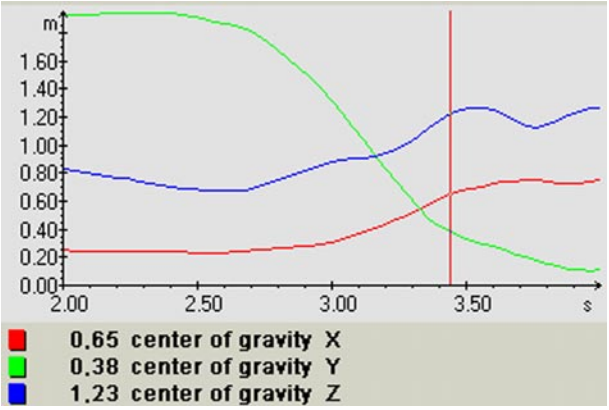
RESULTS AND DISCUSSION

Monitoring of the trajectory of the center of gravity

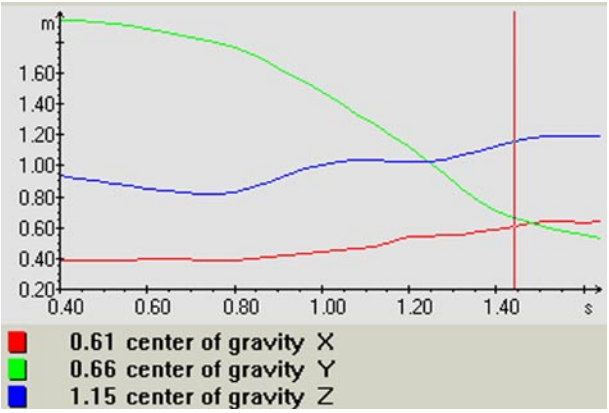
This monitoring was to verify the aforementioned hypothetical connections. By means of the analysis of the most efficient athlete (athlete A), and the least efficient athlete (athlete B) we could compare trajectories of centers of gravity in both athletes, which are shown in Fig. 3 a, b.

Fig. 3
The trajectory of the center of gravity in 3-dimensional plates

a) Athlete A



b) Athlete B



The position of the center of gravity of athlete A was markedly changing, above all at the moment the athlete was twisting. In plate Y the value is changes from the beginning of the slide. Within the moment of shot putting, the center of gravity was in the position 0.32 m, and on plate Z we can monitor the fact that before the start of the slide, the body's center of gravity got lower (in a vertical line). The lowest value was 0.67 m. After that the body's center of gravity went up to the value of 1.27 m at the moment of the shot-put. In athlete B, his body's center of gravity on plate X was changing within a range of values from 0.37–0.64 m. and on plate Y from 2.01 to 0.53 m. At the moment of the shot-put, the athlete's body's center of gravity was at the position 0.60 m, which in comparison with the more efficient athlete A makes a difference of 28 cm. By about these 28 cm, the more efficient athlete was closer to a zero Y value. Athlete B's body's center of gravity was changing on plate Z within a range of values 0.82–1.19 m. The lowest point was reached at the moment before the slide, and at the highest point, at the moment of the shot-put. By comparing these 2 athletes we realized that the body's center of gravity in the more efficient athlete was located before the performance of the slide, about

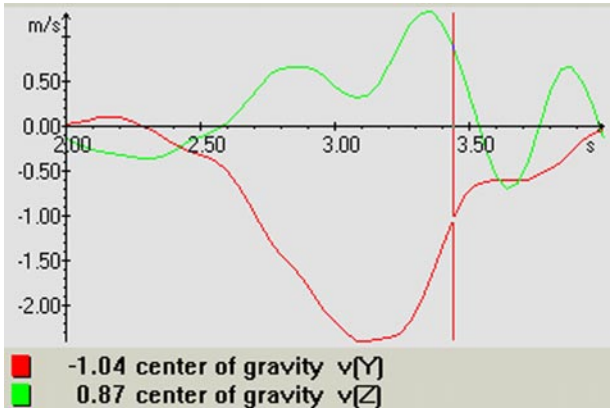
15 cm lower than in the less efficient athlete. During monitoring of the body's center of gravity we confirmed our own hypothesis that the center of gravity in a more efficient athlete changes more markedly in a vertical line then in the less efficient athlete. In association with that it was shown that the more efficient athlete was able to bring closer his center of gravity to the shot-putting line to the positive values of axis Y, which is one of the conditions of a better shot-put. But we did not expect that this value would be so different during the monitoring of athletes.

Monitoring of the speed and acceleration of the body's center of gravity

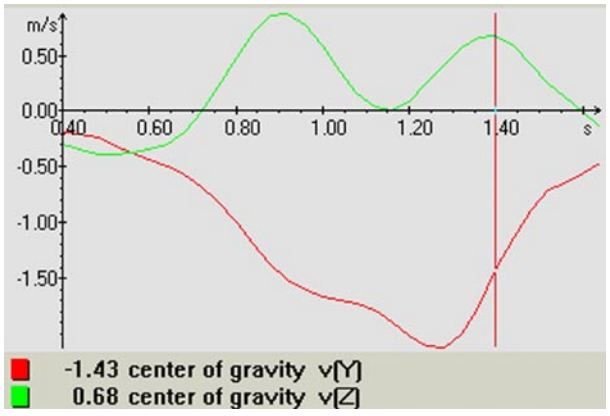
In our hypothesis we supposed that in a more efficient athlete the body's center of gravity would move at a higher speed and with greater acceleration. Fig. 4 a,b enables us to compare acquired data.

Fig. 4
The speed of the athlete's body's center of gravity

a) Athlete A



b) Athlete B

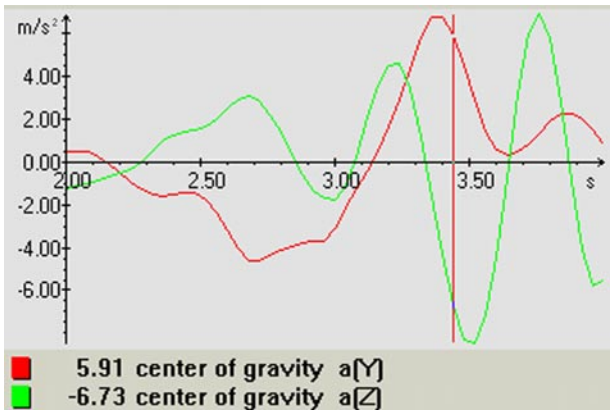


We were monitoring athletes' rates of speed of their bodies' centers of gravity on plates Y and Z. We were able to monitor the highest speed on plate Y in both athletes at the moment of twisting (turning), when athlete A's body's center was moving at the speed of 2.4 m/s and athlete B's at 2.12 m/s. The difference in values was thus 0.28 m/s, to the advantage of the more efficient athlete. On plate Z, the center of gravity of athlete A's body reached its highest value at the moment just before the shot-put (1.27 m/s), in athlete B it was just before the start of the slide before turning (0.87 m/s). We assume that this difference in the performance of the movement of the body's center of gravity was shown in the final performance.

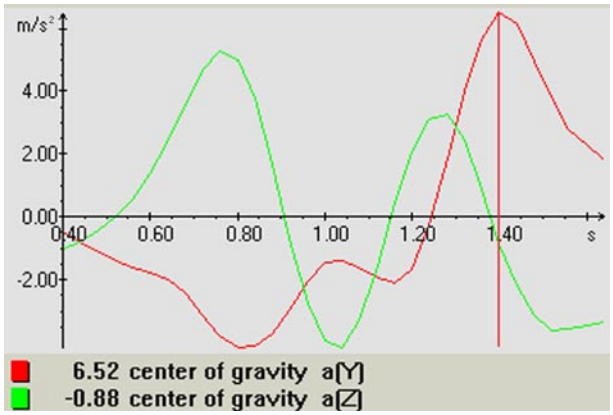
The acceleration of the body's center of gravity is shown by Fig. 5 a, b.

Fig. 5
Acceleration of the body's center of gravity

a) Athlete A



a) Athlete B



The biggest acceleration on plate Z was in athlete A (8.47 m/s^2) after the moment of the shot put, just before the moment of the shot put the athlete's body's center of gravity had an acceleration, on plate Y, of 6.81 m/s^2. In athlete B, the greatest acceleration was on plate Z at 5.26 m/s^2 at the moment before the start of the slide. Equally with athlete B, his acceleration on plate Y just before the moment of the shot put was 6.52 m/s^2. It is important to take into account that in acceleration we can see its minus figures as well (decrease of speed), which corresponds to the running motion of athletes. The biggest differences in decrease of speed occurred just after the moment of the shot put, when acceleration of athlete A was on the Z – plane (in the vertical line)

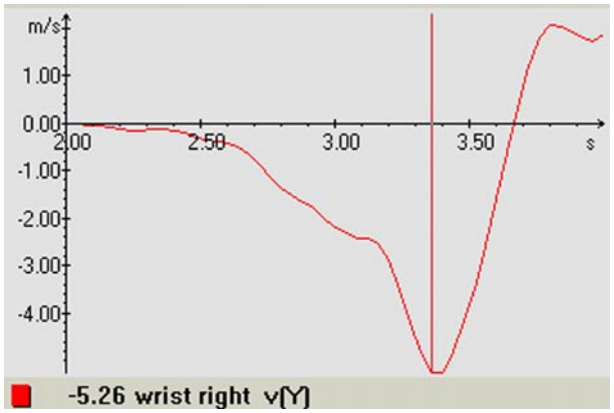
-7.82 ms^{-2} and acceleration of athlete B -3.96 ms^{-2}. This means that the better shot putter managed to slow the movement of his body's center of gravity better than the athlete with lower performance. Our hypothesis, that the less efficient athlete's body's center of gravity is moving more slowly and with a lesser degree of acceleration than the more efficient athlete's body's center of gravity, was confirmed.

Monitoring of limiting performance factors according to a formula for the oblique shot put

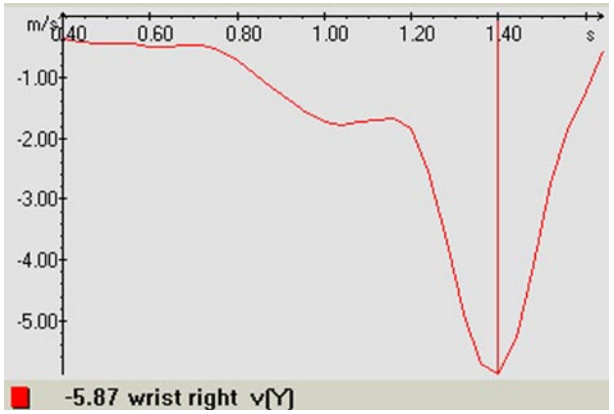
One of the limiting factors of performance is shot put speed. In our case we were monitoring the speed of the movement of the wrist of the right (shot-putting) hand, as Fig. 6 shows.

Fig. 6
Speed of the movement of the wrist of the right hand

a) Athlete A



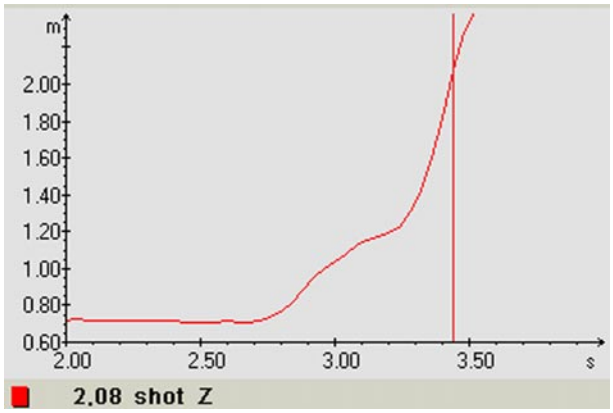
b) Athlete B



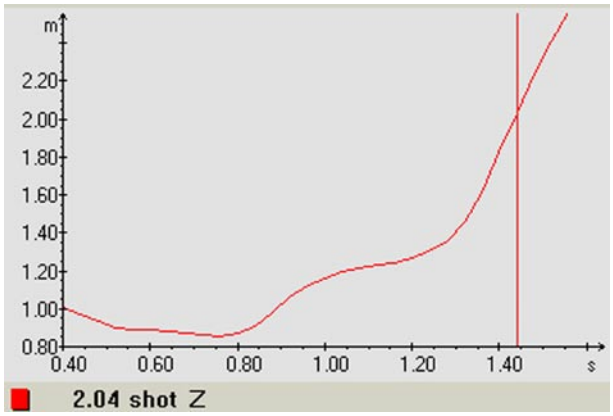
We were very surprised by the result when we compared the speed of the movement of the wrist, because we had expected the opposite result. On the base of theoretical consideration, higher shot-putting speed should mean a longer shot put. This was not the case, so we focused on other important parameters, as for example the shot put height. This is shown in Fig. 7.

Fig. 7
The shot put height

a) Athlete A



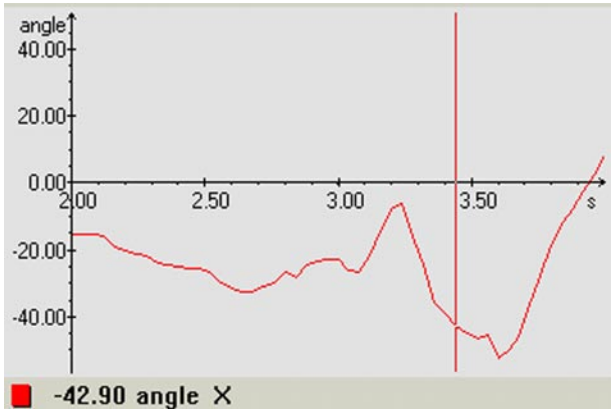
b) Athlete B



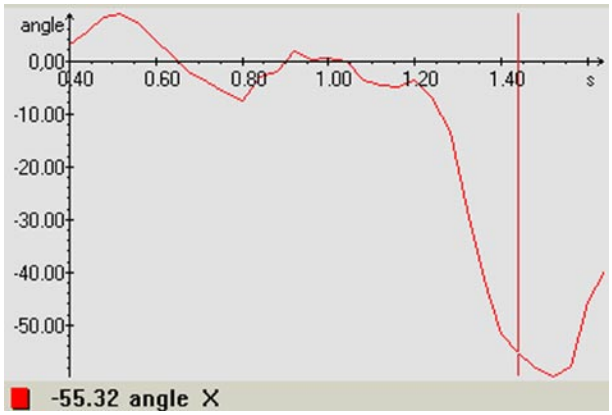
The difference in the shot put height between athlete A and athlete B was 0.04 meters, which we do not consider to be a significant difference. In our other considerations we will assume that the shot put height was identical for both athletes.

Fig. 8
The shot put angle

a) Athlete A



b) Athlete B



As it is shown, the biggest imperfection of athlete B is the shot put angle (Fig. 8), which was, at the moment of the shot put, 55.32°. The optimal shot put angle would be 42–43°. Athlete A was able to reach this range when his shot put angle was 42.9°.

CONCLUSIONS

This study has brought us to the following conclusions for training applications:

- during the training process it is necessary to pay attention to the greater extent of the movement in a vertical line,
- increasing the speed of the movement and acceleration leads to better performance,
- limiting factors of the performance of shot putters are mainly the shot put speed and the shot put angle.

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SLEDOVÁNÍ TĚŽIŠTĚ TĚLA KOULAŘŮ

(Souhrn anglického textu)

Cílem předkládané studie bylo nalezení některých limitujících faktorů výkonu při vrhu koulí se zaměřením na kinematické parametry těžiště těla. Použita byla neinvazivní kinematografická metoda, která umožnila 3-D analýzu pohybu jednotlivých probandů. Na základě uskutečněného sledování při krajských závodech ve vrhu koulí byly označeny jako faktory výkonu kromě faktorů vyplývajících ze vzorce pro délku šikmého vrhu také rychlost pohybu těžiště těla a dále rozsah pohybu ve vertikálním směru. Námi vyslovené závěry by měly vést k optimalizaci tréninkového procesu.

Klíčová slova: 3-D videoanalýza, trajektorie, rychlost, zrychlení.

RELATIONS BETWEEN THE ELECTROPHORETIC MOTILITY OF NUCLEI AND BIOLOGICAL AGE

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Submitted in March, 2003

This study presents an original method of assessment of biological age with regard to all stages of ontogenesis. The method is based on measurement of a number of oral epithelium cells each with a pulsating nucleus in a variable electric field. The method is described in detail – step by step – and the development curve, drawn on the basis of the study of over 3,000 people is presented, too. The possibilities for applying the EMN method in different areas of medicine and sport have been presented.

Keywords: Biological age, electrophoretic motility of nuclei, ontogenesis.

INTRODUCTION

In studies of children and youth, the most frequently considered criteria in the assessment of biological age are: skeletal (bone), tooth, secondary sex characters and morphological criteria. In everyday assessment of the developmental level and regularities the last of the above criteria is applied – due to its simplicity in terms of methodology and the availability of equipment. The above criteria are limited to use in the stage of progressive growth. If we consider ontogenesis as three stages (progressive, stable and involutional) these criteria allow us to assess developmental age (Anderson et al., 1975; Stein & Rowe, 1982; Tanner, 1983; Kopczyńska-Sikorska, 1986; Flugel, 1986; Bielicki et al., 1986; Miaśkiewicz, 1987; Rosenberg, 1991; Hauspie et al., 1991; Tiemann, 1991; Kobyliansky, 1995).

In the cases of the stable and involutional stages in adults it is difficult to find single-feature determinants of development. The criteria used in the progressive stage fail. In gerontology the assessment of biological age is based on multi-feature methods. These are not only morphological features, but also physiological, functional and psychomotor. Various batteries of examinations are applied including many biomarkers that allow us to assess the physical condition of the body and physical health (Comfort, 1969; Heikkinen et al., 1974; Nakamura et al., 1974; Borkan & Norris, 1980a, 1980b).

It is difficult to use one criterion to join all stages of ontogenesis – very different by themselves. A determinant has been searched for which would: 1/specify the level of advancement in developments of a biological character and specify what section of the stage of progressive growth remains there in order for an individual to reach full maturity, 2/ inform about the section of ontogenesis remaining until the end of life, with simultaneous differentiation between individuals in terms of a given factor at the stable and involutional stages.

In case of children practising sports, the evaluation of the developmental on the basis of the features that constitute the criteria of selection for a discipline is not adequate to the actual picture of the biological value of an organism.

Our interest in the electrophoretic features of cells stemmed from this scientific search. Helmholtz and Smoluchowski first described electrophoresis of nuclei in biology in 1942 (Mayhew & Nordling, 1968). In 1962 Eisenberg (Eisenberg et al., 1962) observed electrophoresis of nuclei in laboratory rats. Plant material (onion, corn) was subjected to electrophoresis by Sachbazov and Lobyncev in 1971. Maekawa (1967), Kishimoto and Liebermann (1965), and Mayhew and Nordling (1968) assessed the value of the EMN index of animals. In further stages of the research electrophoretic motility of nuclei was observed in humans (Shakhbazov et al., 1986, 1996). The material was the epithelium of the oral cavity. The first development curve of the EMN (electrophoretical mobility of nuclei) index was drawn, which is different in different stages of ontogenesis (Shakhbazov et al., 1997; Czapla & Cieślik, 1998).

The studies carried out to date confirm that the index of electrophoretic motility of nuclei satisfies the conditions allowing a given biological character to be a determinant of biological age: it shows changeability during development; its correlation with the calendar age is not very strong; it reflects changes which are the manifestation of developmental phenomena; in one age group older and younger biological groups may be separated; the character is sensitive to environmental factors; changes in the distribution of the character have the same direction in all individuals.

The main advantage of the EMN index is the existence of permanent directed changes during the entire duration of ontogenesis (Kaczmarek & Szwed, 1998).

The aim of the study is to present the method, the methodology and ways of applying the electrophoretic motility of nuclei method in scientific research.

MATERIALS AND METHODS

The experimental material included body mass and body height measurements taken in a group of 3024 children and youth aged 7–23 years. Additionally, the researchers drew oral cavity epithelium from all of the subjects. table 1 presents the numerical characteristics of the empirical data.

Necessary equipment: Eppendorf test-tube, 0.09% solution of sodium chloride, disposable hematological knife, disposable gloves (plastic or surgical), microscopic cover glass 18'', microscopic slide made of normal glass, 75 × 26 × 1.5 mm with two electrodes – the distance between the electrodes 18.1–18.2 mm, each electrode is 6.0 mm wide (electrodes are glued to the slide), a pipette, blotting paper, a set of test-tube holders.

The required devices: an optical microscope with a permanent source of light, allowing for a magnification of at least 160 times (i.e. product of eyepiece and objective), the Biotest apparatus which generates a variable electric field with the following parameters: voltage of 20–30 V, electric field intensity 0.1 mA, frequency of changes of electric field poles 1–2 Hz.

The method: Oral epithelium is collected from the oral cavity (cavitas oris) by scraping it off with a sterile disposable hematological knife. It is deposited in an Eppendorf test-tube, which is filled halfway with a 0.09 % solution of sodium chloride. The epithelium is collected from the oral vestibule (vestibule oris), from the inside of the cheeks (bocce). The side parts of the oral vestibule restricted by the cheeks are called the buccal cavity (cavum buccae) by some anatomists. Oral epithelium is collected when the mouth is wide open and the tongue is withdrawn. The subject's oral cavity should be cleared of food remains, e.g. by rinsing, the subject should not have drunk alcohol for at least 24 hours prior to the collection, smoking and chewing gum directly before collecting the cells should also be excluded. The scraped epithelium (visible on the knife) is deposited in the test-tube. The epithelium collected in this way may be stored in a refrigerator at the temperature of 10 degrees Centigrade for approximately 5–6 days. If cells have been deposited in a fridge, before the assessment of the EMN index under a microscope the test tubes should be left for approximately 15 minutes at room temperature for the temperature to balance. Approximately 3 to 5 samples may be prepared in this way at one time. Leaving a larger number of test tubes, e.g. close to a source of light, causes an increase of temperature and distortion of the result. A test-tube with epithelium should be strongly shaken in order to obtain fractions of single cell objects. Then a few drops (4 to 8) are taken with a pipette on a microscopic slide (between the electrodes) and covered with a microscopic cover glass. One should be careful not to leave air under the cover glass. Air bubbles may cause a bad microscope picture. Afterwards there must be liquid between the two electrodes (connecting them). If the electrodes are not connected, more drops should be added. The water environment ensures the passage of current between the electrodes. During the observation no sodium chloride or distilled water or suspension should be added, as it leads to the mixing of the sample and another counting of the same cells. It is important to get some practice before the proper assessment so that the time of microscope observation of one sample is not longer than those 7–10 minutes. A longer observation causes inevitable heating of the sample by a bulb, which is a source of light, and, what follows, the drying of the sample, no connection between the electrodes and stopping the passage of current. To obtain an optimal level of passage of current a good physical condition of electrodes is required. A stable contact of electrodes with the solution of sodium chloride causes corrosion processes. Corrosion centres on electrodes disqualify the microscopic slide from further experiments.

The assessment of the numerical value of the EMN index may start now. It is recommended that the microscope observation should start, e.g. from the top right corner (microscopic picture – it corresponds to the left bottom corner of the microscopic slide), and moving the microscope stage from right to left, moving down by one field of view, moving the stage from left to right, moving the stage by one field of view, etc. until the top edge of the cover glass is reached. Only cells form the second layer of the epithelium are assessed, i.e. counted. The oral epithelium consists of three layers of cells. This is stratified non-hornifying epithelium. Each layer is built of different types of cells: the deepest layer is made of young, immature cells with a characteristically large nucleus compared to the amount of cytoplasm; the middle layer is made of mature cells with clear bright nuclei. The relation of the amount of cytoplasm to the area of the nucleus is greater than in the case of the layer of young cells. The outermost layer of the epithelium is built of large exfoliating cells. In this case their nuclei are small and frequently rod-shaped. There is a lot of cytoplasm compared to the nucleus.

Mature cells, which have not yet undergone exfoliation, are selected for observation. There is not a clear border between the layers, therefore in the selection the following rules should be observed – if only one criterion is not met a cell should be rejected (a cell does not have to meet all these criteria at once):

1. The smallest, immature cells as well as the largest, exfoliating cells are rejected.
2. A nucleus should be round and pale; cells with rod-shaped or darkened nuclei are rejected.
3. Cells with a small amount of cytoplasm in relation to the size of the nucleus (these are young cells) are rejected as well as cells with a decidedly large amount of cytoplasm (exfoliating cells).
4. Cells joined with other cells are rejected; only single cells may be selected.
5. Cells with motile nuclei, which come from the second layer and which are pulsating are rejected. A moderate movement of cytoplasm caused by the movement (pulsation) of the nucleus is permitted.

6. If a cell constitutes a basis of doubts so as to the accuracy of selection – it is more advantageous to omit it in the measurement.
7. Motile nucleus (= pulsating, moving) is a nucleus, which influenced by electric current (in a variable magnetic field) changes its location, i.e. there is a temporary (pulsating) displacement of the nucleus in the direction of one of the electrodes and a return to its original position. The pulsation is closely related to the polarity of the variable electric field. The picture of this change of location corresponds to the acoustic sound generated by the Biotest apparatus, which reflects the changes of the poles of the electric field within the 1–2 Hz range. The frequency of 1 Hz seems to be optimal due to the sight and hearing coupling, since as the value increases the speed of pulsating of nuclei increases. This is a value to be individually set.

The basis for the assessment is determining the relationship of cells with motile (pulsating) nuclei to cells with non-motile nuclei for each 100 cells observed and qualified for the assessment (e.g. the EMN index of 62 means that for 100 observed cells, 62 cells have motile nuclei and 38 cells do not display this feature). Cells in the field of vision under 160 times magnification are observed (increased magnification causes a decrease in the field of vision and slowing down of the observation). Cells from the second layer are selected and the cells with motile and non-motile nuclei are counted. The count is performed by optional pressing of one of the two buttons on the Biotest apparatus (the button "motile" or "non-motile"). The apparatus automatically sums all cells and signals each 100 cells (the number of cells with a motile nuclei + the number of cells with non-motile nuclei). The display of the apparatus may give both the value of the EMN index and the number of cells with pulsating nuclei and the number of cells with a non-pulsating nuclei – depending on the version of the Biotest apparatus. If the studied sample does not have 100 cells which meet the above conditions, a sample should be prepared again and the EMN index assessed.

Before preparing the next sample, the microscopic slide and cover glass should be rinsed with distilled water to remove the previous sample. The slides and cover glass may be wiped dry with an absorbent cloth. The slide and cover glass should not be rinsed with other substances, especially alcohol – these substances react with the glue used to fix the electrodes to the microscopic slide and cause the electrodes to become detached.

Collecting the material and preparing it for microscopic observation should be done in disposable gloves (Wawrzyniak, 1998b).

RESULTS AND DISCUSSION

To assess the reliability of the measurement, the intra-subjective error was calculated. The technical measurement of the error of the EMN index for the intra error TEM is 0.61 (Wawrzyniak, 1999).

As the pictures 1 and 2 (Fig. 1 and 2) show, the EMN index has a dual nature. From the age of 7 to 17–18 years the values of the index increase and decrease after 18 years of age. Before they cross the developmental curve they display the nature of a destimulant – due to the fact of the inflexion of the curve before 18 years of age, low values classifying an individual as biologically younger are required; and afterwards a stimulant – after 18 years of age the situation is reversed – high values of the EMN index characterize the subject as younger.

The shape of the development curve of the EMN index enforces caution during assessment of the developmental age. Due to the high point of the value being at the age of 17–18 years one should observe the rule that individuals younger than 18 years will always be referred to the curve with a growing trend and individuals older than 18 years – to the fragment of the curve with decreasing values. In both groups (before and after 18 years of age) the EMN index shows a statistically relevant relation to calendar age.

As it results from the general model of formation of morphological traits in ontogeny, the correlation coefficient should not be statistically significant at stable or involutional stages. However, the EMN index should show a significant correlation with age. Until the moment of the bend in the curve (17–18 years) the correlation should be directly proportional and the inversely proportional correlation should occur after this period. These assumptions were confirmed in the experimental group (TABLE 2, 3). In the statistical analysis, a Spearman correlation indicator was used since it was impossible to meet the requirement of continuity of the feature – which is required when using the Pearson correlation indicator.

The occurrence of constantly oriented changes throughout an individual's entire life is the main merit of the electrophoretical mobility of nuclei. It discloses the fundamental issues in biology and in research into human changeability i.e.: Intrinsic changeability, changeability between individuals, shows its directionality according to the hitherto existing knowledge of ontogeny.

Two extremely important aspects of the assessment of development on the basis of the EMN index should be highlighted:

1. Electrophoretic motility of nuclei may be a determinant of biological age in the whole ontogenesis, constituting the biological system of reference in the assessment of a body's development. In the progressive stage by specifying the individual's progress so far it informs about the level of advancement of the biological development processes. And at stable and involutional stages by informing about the section of ontogenesis remaining until its end it specifies the level of use of biological potential of a body.

1) The EMN index is particularly useful in sport and training, where other determinants of developmen-

tal age fail. Morphological features are most often used as measures of development. However, they can become unreliable when they themselves establish the criterion of selection to a sports discipline or when some rangers of values are optimal for the same given standard of training. The EMN index is not burdened with these features. The children who go through training show a higher level of the EMN index values than the children who do not go in for sports, e.g. the effect of this is the fact that young swimmers are biologically older than their peers, however, the shape of the curve of development of the EMN index in swimmers goes at a different level depending on the seniority of training (Wawrzyniak, 2001). The EMN index, while not a basis for selection, displaying the features of biological age criteria in the whole ontogenesis, allows for the assessment of the biological value at any moment of life, irrespective of the undergone training and type of sport (Riegerová et al., 1998; Wawrzyniak, 1997, 1998a).

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VZTAHY MEZI ELEKTROFORETICKOU MOTILITOU BUNĚČNÝCH JADER A BIOLOGICKÝM VĚKEM
(Souhrn anglického textu)

Studie prezentuje originální metodu odhadu biologického věku s ohledem na použití v různých fázích ontogenetického vývoje. Metoda je založena na determinaci počtu pulsujících jader epiteliálních buněk ústní dutiny v elektrickém poli. Principy metody jsou detailně popsány a jsou předloženy vývojové křivky dětí a mládeže ve věku 7–23 let sestavené na základě sledování 3024 probandů. Ve věkových kategoriích 7–18letých hodnota indexu EMN vzrůstá, po 18. roce věku klesá. Hodnota indexu se odvíjí od biologického procesu vývoje.

EMN lze použít ve sportu a tréninkovém procesu. Děti, které se věnují sportu, mají vyšší hodnoty EMN než děti, které nesportují.

Klíčová slova: biologický věk, elektroforetická motilita buněk, ontogeneze.

TABLE 1
The numerical characteristics of the empirical data

Age group[1]	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Boys	102	99	99	90	106	93	100	97	81	90	80	79	80	93	92	84	67
Girls	122	105	105	87	102	103	104	91	75	81	88	83	93	66	80	51	56

[1] e.g. the age group 7 – from 6.50 to 7.49 (Eveleth & Tanner, 1976)

TABLE 2
Spearman's rank correlation coefficient – boys

Spearman's rank correlation coefficient (7–18 years)

	Age	Body height	Body mass	The EMN index
Age		**0.929***	**0.870***	**0.586***
Body height	– 0.177		**0.936***	**0.582***
Body mass	0.135	**0.495***		**0.549***
The EMN index	**– 0.353***	0.094	– 0.003	

Spearman's rank correlation coefficient (17–23 years)
* significance level 0.0001

TABLE 3
Spearman's rank correlation coefficient – girls

Spearman's rank correlation coefficient (7–18 years)

	Age	Body height	Body mass	The EMN index
Age		**0.886***	**0.844***	**0.547***
Body height	0.004		**0.898***	**0.488***
Body mass	0.034	**0.372***		**0.479***
The EMN index	**– 0.505***	– 0.011	– 0.011	

Spearman's rank correlation coefficient (17–23 years)
* significance level 0.0001

Fig. 1
The developmental curve of the EMN index – boys

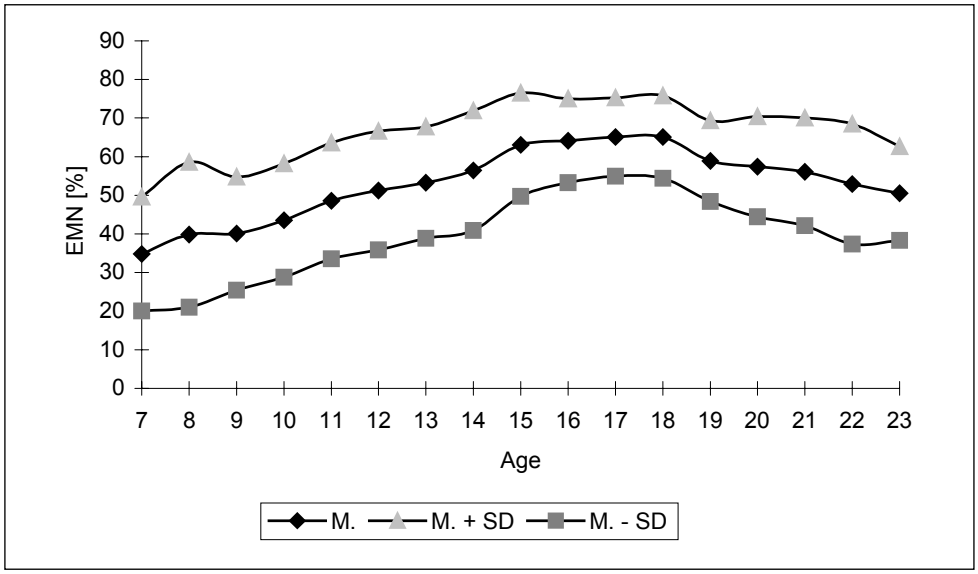
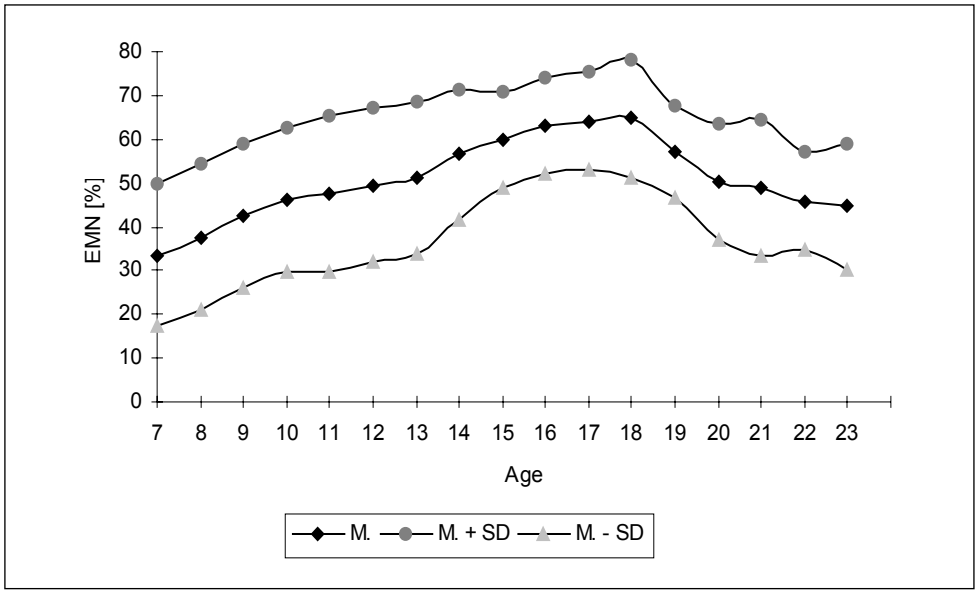


Fig. 2
The developmental curve of the EMN index – girls



DIDACTIC CATEGORIES IN INCLUSIVE PHYSICAL EDUCATION LESSONS AT THE SECONDARY SCHOOL LEVEL: A CASE STUDY

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The purpose of this study was to describe and analyse didactic categories in inclusive PE lessons based on a background of case study. Inclusive PE lessons were processed with 18 girls at secondary school level including one of them with physical disability. Chronometric observation of didactic categories in this case study documented that real inclusion and activities "together" were possible even when didactic categories were related to the content of PE lessons. The presented article was a part of the GACR (Grant Agency of Czech Republic) project No. 406/00/1606 (2000–2002): "The best place for all of us: Integration of youth with disability through physical activities, education and sports." The project was developed in co-operation with THENAPA (Thematic Network "Educational and Social Integration of Persons with a Handicap through Adapted Physical Activity").

Keywords: Inclusive physical education, didactic categories, interaction, content of PE lessons, student with physical disability.

INTRODUCTION

Integrative trends are penetrating the spectrum of daily life: activities pertaining to existence, education, jobs and leisure time. More attention is being paid to school integration and the period following inclusion than in the past. Legislation about integration started to be developed in the Czech Republic in 1993. Since that year, school law (and the additional charters which have followed) has stressed the right of parents/students to choose either an integrative or separate model of school education. Still the integration process is slow because of architectural, attitudinal and economic barriers. The academic education of included children seems to be more progressive in comparison with PE lessons.

General Physical Education (GPE) is a mandatory part of school education. In spite of mandatory PE (two GPE lessons per week) children with disabilities are very often excluded from PE lessons. The issue of exclusion is strongly discussed as a multi-factorial problem. The main reasons depend on medical assessment under an old-fashioned health classification system, parents' awareness of educational rights and the PE staff.

An earlier pilot study under the auspices of the THENAPA European project proved that the main problem was a lack of education and training of GPE teachers in certain subjects and programmes. Based on these findings we have developed the project "The best place for all of us".

STATE OF KNOWLEDGE

A short review of research and literature related to the inclusion of students with disabilities on a world-wide scale

Inclusion is defined as the education of all children with disabilities (mild to severe) in regular education even if special resources are needed to make it effective (Block, 1994). Theoretically, an inclusive class is a setting where all children belong in a total community effort to learn, grow, and become more socially accepting of one another (Sherrill, Heikinaro-Johanson, & Slininger, 1994; Stainback & Stainback, 1990). Practically, even though many children with disabilities learn in unique ways, the separation of these children from peers may unneccessarily hinder the development of their full potential (Downing, 1996). Specifically, in physical education, inclusion has been effective in facilitating motor engagement, motor performance, and the self-concept of children; however, these studies have largely involved only children with a mild degree of disability (Beuter, 1983; Block & Vogler, 1994; Heikinaro-Johanson, 1995; Houston-Wilson, Dunn, van der Mars, & McCubbin, 1997; Karper & Martinek, 1983; Silverman, Dodds, Placek, Shute, & Rife, 1984; Vogler, van der Mars, Cusimano, & Darst, 1990, 1992, 1998).

Children with disabilities are increasingly being included in physical education (PE) lessons around the world (DePaw & Doll-Tepper, 2000; Downs, 2001; Hutzler, Yaakov, Almosny, & Bergman, 2001; Lienert, Sherrill, & Myers, 2001). Guidelines for inclusion practice have been delineated in many countries such as the USA (Block, 2000; Sherrill, 1998), Canada (Active Living Alliance of Canadians with a Disability, 1995), Australia (Downs, 1995), Finland (Heikinaro-Johansson, Sherrill, French, & Huuhka, 1995), and Israel (Superintendent Ministry of Education, 1994). A majority of published research studies covers teachers' and peers' attitudes toward the included children (Block & Rizzo, 1995; Block & Zemen, 1996; Slininger, Sherrill, & Jankowski, 2000) and outcomes of the inclusion process (Houston-Wilson et al., 1997; Liebermann, Dunn, van der Mars, & McCubbin, 2000; Vogler et al., 1990). Thus far, only limited information has been reported re-

garding the included children's own perceptions of the inclusion process in PE lessons (Blinde & McCallister, 1998; Goodwin & Watkinson, 2000; Goodwin, 2001; Place & Hodge, 2001). Many professionals believe that students with disabilities should be included in all school curricula, including regular physical education (Block, 1994). The trend toward applying this inclusive philosophy has introduced a broad range of issues, including whether the same criteria should be used to determine final class grades for students with and without disabilities (Auxter, Pyfer, & Huettig, 1997).

In most cases, regular PE teachers have been able to maintain quality programs for their students without disabilities while making simple adaptations for students with mild and moderate disabilities (e.g., Vogler et al., 1990). Some adapted physical education (APE) teachers have called for their inclusion if proper support is given in the form of specially trained personnel and adapted equipment (e.g., Block, 1992), while others argue that regular PE teachers are not prepared to provide appropriate, individualised programs for students with severe disabilities (e.g., Morreau & Eichstaedt, 1983) and inclusion of students with severe disabilities will negatively affect the physical education program for students without disabilities (e.g., Lavay & DePaepe, 1987).

The impact that inclusion has on students without disabilities is often overlooked. Advocates of inclusion usually look out for the best interests of students with disabilities, not students without disabilities. Certainly it can be argued that if including students with disabilities is so disruptive as to significantly impact the education of students without disabilities, then inclusion is not working (Block & Zemen, 1996).

One strategy for helping physical educators work with administrators, parents, and students of all ability levels is to use the case study approach, and include an APE case in teacher-preparation classes. The educators of teachers need to acknowledge the diversity of today's school population, and the complexity of effectively teaching in such an enviroment (Bolt, 1998; Wilson, 2000).

Overview/review of research and literature related to the inclusion of students with disabilities in the CR

Before 1990 the education of students with disabilities was solely in the hands of segregated special schools, which were established during the Communist regime. Although these schools were first founded to improve the lives of people with disabilities, they seem to have failed to prepare them completely for life, because of the initial segregative nature of special schools.

The first changes in the educational system were outlined by a 1991 resolution of the Ministry of Education. This resolution, for the first time, explicitly approved an option (not a requirement) to accept to general elementary school children with disabilities (Michalík, 2000). According to this resolution, the school principal can establish special classes for students with hearing impairment, visual impairment, physical disability, intellectual disability, and for students with speech impairment.

The question of who has to be integrated, or for whom integration is inconvenient is still open/unanswered. Integrated children were, during the progress period, called "those for whom integration is possible". This term has been changed recently and defined as "those for whom integration is convenient". The legislative formulation is not clear and legal norms do not say explicitly who is responsible for the decision on how and where to educate a child (Michalík, 2000).

The situation in inclusive physical education practice was described in diploma theses under the auspices of the GACR project (Válková, 2002). Research assessment of APA-Palacký University Olomouc students dealt with the observation of described didactics categories in an inclusive GPE setting (Kudláček, 1997; Obrusníková, 1998; Konvička, 1999).

Research concerning the question of the integration of children with cerebral palsy (CP) into regular schools was done in Olomouc, too and described the feelings, atmosphere and living situation of the family of a "child with a disability" and the family's situation in the very complicated developmental period of entry to the first grade of primary school and the first years of learning. This research project highlighted changes in funds, environment, classmates and its influence on the child and his/her family and environment. They conducted testing using psychological projective techniques, descriptions of situations, interviews including structured interviews, and a set of scales for the determination and detection of the problems being researched and areas of further research interest in the field of integration with a focus on sport and physical activities (Čurdová, 2001).

THE PROBLEM, THE PURPOSE OF THE STUDY, AND RESEARCH QUESTIONS

Most studies about inclusion have focused on and emphasised the attitudes of teachers and/or PE teachers, the attitudes of an included child with a disability or the inner positive/negative experience of included child, and case studies oriented to an individual PE education plan. Even these topics are crucial from another aspect of the quality of the program, the content of PE lessons. Characteristics of participation seem to be important for the quality of future potential attitudes and one's perception of successful or non-successful inclusion.

In case the child with a disability is included in PE lessons several issues must be solved:

a) How to achieve the main aims of the PE lessons (considering Czech PE curricula): improve fitness, learn skills and improve them, learn and maintain intellectual knowledge and provide positive emotional experience in a social setting;

b) How to achieve the aims of PE lessons for both the included student with a disability and students with-

out disabilities in all didactic units of PE lessons (the introductory part/introduction, warming up, main part, and relaxation or closing part).

GPE lessons can be understood as an inter-active process involving all participants: regular students and the included student, teachers' personalities and their special didactic approaches, programs based on general PE curricula adapted to an integrative setting, and conditions. The *Didactic category* of an inclusive lesson can be formulated as an inter-active relationship among the included student, classmates and the PE teacher in the PE process. If we would like to analyse, e.g. attitudes between class-mates and the included student and the internal satisfaction of all participants, we need to know for how long all students have been truly together and for how long all the students have been in different integrative settings on the continuum of least – most restrictive PE setting (Block, 2000) and also simply on the continuum of the integrative – parallel – separate setting.

Answers to the following research questions are crucial for case study assessment:

a) Are children with disabilities truly included in the PE process (with respect to the locality, as well as to physical, social and psychological perceptions)?
b) Are they together in every part of regular PE lessons? For how long?
c) Can we observe and assess "didactic categories" typical of inclusive GPE lessons?
d) What are the contents of PE lessons when students are predominantly together?
e) Can we find some differences in the PE lesson process related to the aspects: parts of lessons, the content of lessons?

THE MAIN AIM

The main issues of the very complex three-year project "The best place for all of us" were as follows:

1. legislative analysis,
2. statistics of "included" children and pupils (aspects of age and diagnosis),
3. the phenomenon of "exclusion" from PE,
4. attitudes towards integration and inclusion (PE staff, PE students),
5. PE curricula and integrative setting assessment,
6. field research:
   inclusive PE lessons management,
   inclusive PE lessons evaluation from various aspects,
7. programming:
   of APA students' education,
   of field PE teachers' conductive training.

The main aim of the presented article is focused on point 6: inclusive PE lessons assessment from the aspect of the parts of the lessons and the content of lessons based on the background of case study. Step by step tasks were:

a) regarding empirical experience to manage and carry out inclusive PE lessons at the secondary school level (7th class);
b) to formulate appropriate "didactic categories" on the continuum of the integrative – parallel – separate setting of integrative PE lessons regarding the main aims of PE education;
c) to process the system of PE lessons observation in reality;
d) to analyse and summarise "didactic categories" in inclusive PE lessons in relation to the parts and content of PE lessons.

PROCEDURES

The content and organisation of PE lessons were managed according to current curricula of PE lessons in 7th grade. The content of PE lessons include modification – adaptation empirically – with knowledge from diploma theses of the GACR project students-group. Kudláček (1997) observed and evaluated six inclusive PE lessons with a wheelchair user in the first grade. Obrusníková (1998) observed four inclusive PE lessons also in the first grade and recommended modifications of curricula. Konvička (1999) observed and evaluated eight inclusive PE lessons at secondary school and re-formulated "didactic categories". The student with a disability was a wheelchair user who was, in some cases, able to walk with crutches. All diploma theses tried to find the most appropriate way to integrate the student with a disability into an effective PE process.

The final version of the categorical observation system and didactic categories criteria were completed in Halamičková's thesis (Halamičková, 2002).

Our student with a disability had Cerebral Palsy (mild spastic quadriplegia). Her family was not very sport-oriented but they wanted to include her in PE from the first grade. The class consisted of 18 girls at 7th grade at secondary school, the age ratio was 13.2. The PE teacher (a woman) had minimal knowledge of inclusive PE but a great interest in inclusion. Equipment conditions for PE were on the general level of schools in the CR (a school gym with basic equipment, an outdoor pitch area and a small grass playground). Field research at secondary school was realized during the year 2002. Seven PE lessons in the Spring/Summer period and five lessons in the Autumn period were observed and analysed. The content of lessons was related to general PE curricula at the secondary school level.

METHODS AND INSTRUMENTS

Case study

The case study is typically used to examine a specific phenomenon that has obvious boundaries, such as a program, event, person, institution, or social group where one wants to achieve as full an understanding of a particular case as possible. The case study is the preferred design in examining contemporary real life

events when behaviour is complex and cannot be easily manipulated. It is used when there are not enough participants to use other research methods. Based on this we selected the case study method to examine a regular physical education class in which a child with severe disability was included, using the people resources model of (Block & Vogler, 1994).

The case study is a form of descriptive research. Whereas the survey method obtains a rather limited amount of information about many subjects, the case study gathers a large amount of information about one or few subjects. Although the study consists of a rigorous, detailed examination of a single case, the underlying assumption is that this case is representative of many other such cases. Consequently through the in-depth study of a single case, a greater understanding about similar cases is achieved (Thomas & Nelson, 1996).

Case studies methods are used as effective teaching tools to promote discussion, problem solving, and decision making for the realistic concerns of teachers in school settings (Block et al., 2003).

Didactic categories instrument

General principles

Observation and chronometric recording of didactic categories was used. The source of definitions of didactic categories during PE lessons came from the principals of Critical Incident Techniques (CIT) (Flanagan, 1954).

These principles are based on using very easy categorical units, very precisely formulated. A basic differentiating criterion is the definition of bipolar areas of units regarding the aim of the process, e.g.: positive – negative, promoting – interfering, verbal – non-verbal, existing – non-existing.

Areas of category are filled with categorical units which can be evaluated on the first level of statistics: scaling – making ranks, order, counting (making a summary, calculating a frequency), percentages and indices.

These principles were used in pedagogy and sport pedagogy, in the sports process and in all areas where process had to be evaluated. A summary of CIT instruments used in pedagogy and teachers' behaviour assessments has been published by (Piéron & Cheffers, 1988). In a Czech setting, an Analysis of Didactic Interaction (ADI) was developed by (Dobry & Svaton, 1977). Válková (1974, 1990) used Flanagan's CIT principles for creating a categorical scale of the evaluative process in team sport competition and standardised this instrument for the assessment of individual performance of basketball players in competition.

Meek (2000) formulated categories of real participation of students with disabilities in GPE lessons. Five categories preferred physical placement of the included student as follows: 1. does not participate, 2. participates as an observer, 3. participates in a special non-active role, 4. participates in a special active role, 5. participates fully.

In the Czech literature the definition of didactic categories has been developed only by the research group at the Faculty of Physical Culture, Olomouc (Kudláček, 1997; Obrusníková, 1998; Konvička, 1999; Halamičková, 2001). The last version processed for PE lessons with an included student with a physical disability went through a standardisation process in 2001 as a part of the GACR project (Válková, 2002).

Description and explanation

As a criterion of didactic categories the inter-active relation between the included student and class-mates was done with respect to a continuum of the least-the most restrictive PE setting (Block, 2000).

Three basic categories of this continuum: integrative – parallel – separated can be related to didactic forms under Czech school PE didactic theory: (Frömel, Novosad, & Svozil, 1999) frontal setting – group setting – individual setting. Basic categories were experimentally divided into sub-categories.

Inclusive activities (AI):

Types of co-operative activities for participation together (inclusion placement): students are together at the same time and place.

- *Cognitive-emotional (C-E):* This is time used by the teacher for explanation and demonstration of the activity for all participants; equipment preparation; start and end of the lesson; evaluation of individual cases, constitutional elements, and organisation.
- *Motor active with modification (M+M):* Activities are adapted for the pupil with a disability, but these are not different and the pupil is participating in the activity together with his/her peers.
- *Motor active without modification (M-M):* Activities in which the pupil with a disability is able to participate and follow together with the class without any problems or help.
- *Additional (supportive) activity (SUP):* Corroborative, supportive activities where the pupil is involved in the game as a referee or registrar, assistant with tools/equipment, etc.

Parallel activities (AP):

Students are located at the same place and time but participate alongside (parallel to) the main stream of teaching tasks and the teacher's concentration.

- Complementary exercises (CEx): These exercises should be chosen when the pupil is not able to participate in the activity with modification e.g. rope climbing, high jump, etc.
- Other activities–considerable modification (CM): This subcategory is very similar to complementary exercises but here we monitor activities which are totally different then the activity which is the class working on. E.g. class is doing rope climbing and the pupil with disability, instead of working out his/

her upper extremities, is playing with a basketball in the opposite corner, the student is really limited and cannot participate together with the others at all. A different content and intensity of activity is provided, but with one or two other, regular students.

Separate activities (AS):

The student is out of inter-active relation, communication with other students or the teacher.

- *No inclusion (NI):* This subcategory is time with no interest, no advice, the teacher forgot her/him. This subcategory is not seen very often, but we can observe it in inexperienced teachers. We have to take into consideration every minute of this category because it can have a very bad influence on self-esteem and the self-concept of the child with a disability.
- *Other program than PE (OP):* In reality – exclusion of PE, substitution with another program (another subject, location to another class) or no substitution (passive sitting in PE). This subcategory was not observed in our case.
- *Time out (TO):* This category was developed because some activities are too exhausting for pupils with a disability and they get tired earlier then their peers. They need time for resting. Or contra-indication of exercise or – bad organisation could be causes, also student is really limited and cannot participate together with others at all.

RESULTS

Didactic categories analysis and discussion

The TABLES 1 and 2 show a summary of observed lessons. The time observed is chronometrically expressed in minutes and percentages and divided into particular categories.

TABLE 1 concentrates on the Spring/Summer period as the content of PE lessons was a little different than in the Autumn period (TABLE 2).

Two compulsory lessons per week are obligatory in Czech schools. Regularly every week one of the lessons was observed with 2 trained persons: one for timing assessment, one for recording by the pencil and paper system (Halamičková plus an assistant). Hard data were worked out immediately after observation, assessed and classified in didactic categories (CIT categorical scale) and consequently evaluated by percentage level.

Content of lessons in the Spring/Summer period (TABLE 1):

1st Lesson: basic steps in modern gymnastics with a skipping-rope; at the end of the lesson, basic skills in basketball and play.
2nd Lesson: introductory exercises in basketball, preparation for game, explanation of rules.
3rd Lesson: introductory exercises in athletics (track and field); training of the crouch start for the sprint; training of 60m sprinting, the last part consists of ball games (wandering ball).
4th Lesson: 60m sprint, time measurement, ball games.
5th Lesson: endurance run (1000m), introductory exercises for the long jump, measuring jumps.
6th Lesson: measuring of students who were ill or want to improve, introductory exercises for softball.
7th Lesson: playing softball.

TABLE 1

Didactic categories of inclusive PE lessons: spring/summer period																			
NL	**TT**	**AI - C-E**		**AI - MA**				**AI**		**AP**				**AS**					
				M+M		**M-M**		**SUP**		**CEX**		**CM**		**NI**		**OP**		**TO**	
	min.	**min.**	**%**	**min.**	**%**	**min.**	**%**	**min.**	**%**	**min.**	**%**	**min.**	**%**	**min.**	**%**	**min.**	**%**	**min.**	**%**
1	**38**	3	7.9	10	26.3	16	42.1	6	15.8									3	7.9
2	**36**	12	33.3			19	52.7	2	5.5									3	8.3
3	**43**	7	16.3	9	20.9	24	55.8											3	7.0
4	**42**	2.3	5.5			25.3	60.3					14	33.3						
5	**34**	6	17.6			26	76.5											2	5.9
6	**38**	9	23.7			29	76.3												
7	**36**	12.1	33.6			12. 5	34.7									11.0	30.5		
ratio	**38**	**7.3**	**16.8**	**9.5**	**23.6**	**21.7**	**56.9**	**4**	**10.65**			**14**	**33.3**			**11.0**	**30.5**	**2.75**	**7.3**

Index explanation same for both TABLES: NL – number of lecture; TT – total time; AI – inclusive activities (co-operative); C-E – cognitive emotional; M+M – motor active with modification; M-M – motor active without modification; SUP – supportive activities; AP – parallel activities; CEX – complementary exercises; CM – considerable modification; AS – separate participation "activity"; NI – no inclusion; OP – other program; TO – time out.

Content of lessons in the Autumn period (TABLE 2):

1st Lesson: competitions in groups or pairs; some included gymnastics (forward, back rolls).
2nd Lesson: exercises on wall bars, walking on a bank, hanging bank on wall bars, walking, sliding up and down; two groups, competitions.
3rd Lesson: gymnastics on mats, acrobatics.
4th Lesson: gymnastics, jumping over the vaulting box.
5th Lesson: jumping on the trampoline.

TABLE 2

Didactic categories of inclusive PE lessons: Autumn period																			
NL	**TT**	**AI - C-E**		**AI - MA**				**AI**		**AP**				**AS**					
				M+M		**M-M**		**SUP**		**CEX**		**CM**		**NI**		**OP**		**TO**	
	min.	**min.**	**%**	**min.**	**%**	**min.**	**%**	**min.**	**%**	**min.**	**%**	**min.**	**%**	**min.**	**%**	**min.**	**%**	**min.**	**%**
1	**37**	10	27.0			18	48.6							8	21.6			1	2.7
2	**35**	9.3	26.6			8	22.9					13.3	38.0					4	11.4
3	**34.4**	2	5.8			11	32.0			4.3	12.5	13.3	38.7					3.3	9.6
4	**37**	4	10.8			9	24.2					17	45.9					7	20.4
5	**34**	**2**	**5.8**			**8**	**23.5**			**6**	**17.6**	**14**	**41.2**					**4**	**11.7**
ratio	**35.5**	**23.5**	**15.2**			**10.8**	**32.2**			**5.1**	**15.5**	**11.1**	**41.0**	**8**	**21.6**			**9.8**	**11.2**

The content of PE lessons in the Spring/Summer period was focused (related to the general curriculum) on play, sports games and athletics (PGA), in the Autumn period on gymnastics exercises (G). The official length of each PE lesson is 45 min. The real average time of lessons was only 38 min. (Spring – PGA) or 35.5 min. (Autumn – G). This not too pleasant finding is compatible with the situation at general lessons at Czech schools (Frömel, Novosad, & Svozil, 1999) due to very short breaks between lessons (5 min.). A lack time to make the shift, perform personal hygiene, and change of clothing usually cut the direct time of PE lessons. Why PGA lessons are a little longer we are not able to explain. Inclusive activities with a cognitive-emotional category (AI C-E) between 15.2 % (G content) and 16.8 (PGA content) create quite a big part of lessons. Question: a lot of talking, explanation, verbal motivation, evaluation? We have no current exact data for comparison with the situation in regular PE lessons. The lessons with competitions and measurement are more filled with the cognitive-emotional didactic category. In these lessons, more time is spent in explanation, which is a general didactic fact in regular PE lessons.

More percent of typical "together" exercises (didactic category "inclusive category – motor without modification" – AI MA M-M) was found in the introduction, warming up and closing part of lessons which seems to be logical due to simply general exercises with a content of psychomotor, relaxation exercises, etc. The content of lessons seems to be an important determinant of didactic categories: PGA – nearly 60 % of the preferred AI MA M-M didactic category, G – only 32.2%. More chances to be active in other inclusive setting lessons (AI MA M+M or AI SUP) is recorded in PGA lessons (23.6 % or 10.6 %, G – no record in both didactic categories). On the other hand – parallel activities are a more frequent didactic category in lessons with G content. Higher percent of the time out (TO) didactic category in lessons with G content lessons (11.2 %) in comparison with PGA content (7.3 %) can be explain as an unexpected finding as PGA lessons are traditionally considered to be more demanding of physical fitness and exercise loading.

Similar findings are presented by Meek (2000). The order of placement in full participation of students with physical disability in regular PE lessons are as follows (Meek's "placement" is similar to our standardised "didactic categories"): aquatics – 49.5 %, volleyball – 29.6 %, basketball 28.1 %, weight-lifting – 25.8 %, but mostly non-participation, track events – 20.0 %, and gymnastics – 16.9 %.

A first analysis of inclusive PE reality during one school year based on the background of one class and one student with an individual diagnosis shows several differences related to parts of PE lessons, mainly to the content of PE lessons. The findings are important for composing future research projects.

The case study

We will use an imaginary name for our student. Working with Tamara and doing the follow up publishing of the case study was permitted by her parents and the school director. Tamara is a 13-year-old girl, she lives with her parents. Tamara has Cerebral Palsy (mild spastic quadriplegia). She is not a wheelchair user. She is now in the 7th grade in secondary school and she has been in an inclusive class from the beginning of her education. She did not have an individual program for PE until this year. Her teacher prepared one for this school year. She is evaluated by word assessment. In the 1st grade she had to be helped with going to school and back by her mother. For transport, her mother used

a carriage and, inside the building, Tamara was able to walk and move without assistance. The gym hall was accessible, so she started working at PE like all the other children. The only problem was that Tamara's 1st grade teacher did not know how to include her in sport activities together with her classmates without disabilities. When the other children were running, she was working, e.g. with a jumping ball. When the other children did gymnastics, Tamara was playing with a basketball and a basket alone. She liked being together with her classmates, but mostly she was educated in a parallel manner. In the 2nd grade, Tamara was able to walk alone to school. The situation in Physical Education was the same. The teacher had enough work with the rest of the class, so she couldn't pay adequate attention to Tamara. The same situation continued for the years following. The teacher just asked Tamara if she can do this or that activity and when she said, "Maybe yes", the teacher let her try it. If she said "No" the teacher did not modify the activity, instead letting her work again with the basketball. She can jump, skip, run but with some difficulties (caused by her scissors gait). This school year Tamara is on the honour roll. She has never had problems with writing, reading or any other academic subject. She never had an assistant. When Tamara's class started 6th grade a new Physical Education teacher came and also the coeducational system was introduced. This teacher was not educated in APA either and was also asking Tamara what she was able to do. Tamara's class is connected for PE with another one. There were 18 girls in the PE class. Classmates who do not know Tamara from the class sometimes challenge her in a very bad way. She does not feel inferior, just disappointed. Tamara is, in many activities, more active then her peers. She is not so skilled but she likes PE very much. The teacher does not use the possibility of peer tutoring. In gymnastics Tamara never participated in the same activity as the rest of the class. She is afraid just to try it. A good example of total inclusion are lectures with ball games or working on a program. In the curriculum for the 7th grade there is no swimming. In light athletics she can participate but not in the high jump or long jumping. Throwing is without problems, but for training techniques and exercises there is not enough time so she does not throw as far as she probably could. Tamara did not participate in any winter skiing course. We offered her and her family a professional instructor for adapted skiing but she was too afraid. Sometimes she does not do many activities because of the fear of injury.

CONCLUSION

These results are only partial. The content of lessons seems to be important for real inclusion of students with disability, secondarily for the inter-action and attitudes and internal well-being of all participants. Lessons with gymnastics content are more difficult for inclusive program realization. This is not only a problem of the lack of education of teachers of adapted PE, but also a matter of the length of lessons and the number of students per teacher and, probably, other determinants. Aside from the Meek analysis (2000) no exact data, especially from a Czech school inclusive setting, have been presented.

This first analysis of inclusive PE reality during one school year based on the background of one class with one student with an individual diagnosis shows several differences related to parts of PE lessons and mainly to the content of PE lessons. These findings are important for composing future research projects which should respect: a higher number of schools and classes, didactic categories comparison with general PE lessons, comparison of inclusive PE at primary-secondary level, a differential diagnosis of the included student, all students' well-being, inner positive experience and attitudes and a sociometric analysis of inclusive classes. Some of those aspects are included in the worked out project of GACR, "The best place for all of us".

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DIDAKTICKÉ KATEGORIE V INCLUSIVNÍ TĚLESNÉ VÝCHOVĚ NA DRUHÉM STUPNI ZÁKLADNÍ ŠKOLY: PŘÍPADOVÁ STUDIE

(Souhrn anglického textu)

Cílem a záměrem této studie bylo popsat a analyzovat na základě případové studie inklusivní třídy didaktické kategorie v hodinách inklusivní tělesné výchovy (ITV). Hodiny ITV byly zpracovány u třídy na druhém stupni základní školy, kterou navštěvovalo 18 dívek, jedna z nich s tělesným postižením. Chronometrické pozorování didaktických kategorií v této případové studii ukázalo, že při plnění obsahu hodin běžné TV je možné dosáhnout pravé inkluse a společných aktivit. Publikovaný článek je součástí projektu GAČR (Grantové Agentury České Republiky) č. 406/00/1606 (2000–2002): „Nejlepší místo pro všechny: integrace mládeže s postižením prostřednictvím různých forem tělesné výchovy a sportu“. Projekt vznikl v kooperaci s evropským projektem THENAPA (Thematic Network “Educational and Social Integration of Persons with a Handicap through Adapted Physical Activity”).

Klíčová slova: inklusivní tělesná výchova, didaktické kategorie, interakce, obsah hodin tělesné výchovy, žák s tělesným postižením.

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The magazine Acta Universitatis Palackianae Olomucensis Gymnica is an independent professional magazine. The content of the magazine is focused on presentation of research notifications and theoretical studies connected with the problems of kinanthropology. The Editorial Board is looking forward to all manuscripts written on the above subject.

General instructions

The text of the contribution is in English. The contribution is not to exceed a maximum limit of 15 pages (including tables, pictures, summaries and appendices). A summary will be in the Czech language, and by rule 1 page at the most.

The text is to be presented in MS Word editor on a diskette and also as a printout.

All contributions are reviewed anonymously.

Interface of the contribution

Title of the contribution, name(s) of its author(s), workplace, date of handing in the contribution, summary of the text in English, key words.

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Names of individual chapters are to be written in capital letter from the left margin. References to quoted authors see a brief from the FTK UP publication manual.

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Tables, pictures, graphs, appendices

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We look forward to our further cooperation!

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