THE RELATIONSHIP BETWEEN THE ASSESSMENT SYSTEM IN PHYSICAL EDUCATION IN THE FORMER SOVIET STATE OF LITHUANIA AND PHYSICAL ACTIVITY LEVELS OF ADULTS

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Abstract:

This article draws from a study exploring the relationship between the Physical Education (PE) programme in the former Soviet State of Lithuania (more than 20 years ago) and present-day physical activity levels of Lithuanian citizens aged 35 years and older. Discussion embraces the differences in attitudes among physically active people aged 35+ and those who are not physically active to the assessment of achievements, to social characteristics of teacher's assessment, to the influence of assessment on past and present physical activity, enjoyment experienced during PE lessons and the past and present benefit of those lessons, as well as physical activity motivation during the PE lessons in former Soviet Union times. Research findings reveal that insufficient engagement during PE lessons increases the chance of future physical inactivity by 1.65 times. The absence of any positive correlation between the assessment mark and the positive relationship between an individual and the PE teacher increases the chance of future physical inactivity by 2.12 times. Lack of, or inadequate understanding of, the benefits of physical activity to the quality of life and a healthy lifestyle increases the chance of future physical inactivity by 2.20 times.

Key words: *ready for labour and defence, physically active people, motivation*

Introduction

The politico-ideological division of Europe into East and West in the post-World War II period of 1945-1990 was not only testimony to a period of Iron Curtain politics, but also of two contrasting physical education and body education concepts, well exemplified in convergence of different "body education curricula" in the so-called "socialist bloc" of eastern European countries and, on the other hand, divergence, albeit with similarities evident in overall purpose, aims, objectives, structures, and recognition of its value in optimal development of the individual in the Western European and Scandinavian countries. Marx-Leninist ideology prevailed across Eastern Europe, which was exposed to and dominated by largely Russian driven sovietisation policies and practices. It was a form of harmonisation but one born out of political and social control. Physical culture and sport had its roles to play, especially in building national conscience and consciousness, as well as in preparing the citizens for labour and defence in which fitness and military undertones were prevalent. Ideological superiority over the "West" was grounded in striving for supremacy in the sporting arena for which the development of elite sport systems was paramount and Physical Education (PE) in schools, including any extra-curricular activity, was one stage in talent identification and development – the rise of the Sports School was inherently guaranteed. With heavy state investment in facilities and equipment as well as in trained personnel in the pursuit of medals, the notion of "Sport for All" soon became "Sport for Some" (Hardman, 1991). The 'socialist bloc' successes in Olympic Games and other World championships were there for all to see.

In many former "socialist bloc" countries, the aftermath of the circa 1990, various "silent" revolutions brought exposure to the so-called western-style democracy, which made politicians prone to ideological "wish-listing". After 1991, with liberation from the Soviet occupation, within the education domain, "wishes" were gradually translated into idealistic curricula policy and planning principles. In school physical education, the early 1990s conceptual re-orientations embedded in ideas on humanism and democratic freedom, as well as in refuting any soviet ideas of militarisation, ushered

in elements of liberalisation, frequently based only on pupils' interests and neglecting knowledge of young people's needs, as well as scientific research (Hardman, 2005).

Typically, in the former Soviet Republic of Lithuania PE lessons differed from those in the Western European countries. Physical Education (officially in the Soviet Union "Physical Culture and Sport") was politicised and propaganda driven; it was more imposed than provided with the emphasis on mass participation to foster labour productivity and defence capability. Characteristically, "militarised" lessons and preparation for the normative of Ready for Labour and Defence (abbreviated as GTO; in Russian: «Готов к труду и обороне СССР», i.e. Gotov k trudu i oborone SSSR) tests were predominant and team games such as basketball or football seldom featured (Tamulaitiene, 2010). The post-1991 politico-ideological changes concomitantly produced societal and school education changes, which essentially ousted the cult of performance achievement results to be replaced by a broader health-related programme aiming to promote an active and healthy lifestyle, in which attention to pupil interests, development of positive attitudes and enjoyment had a distinctive part to play in the process (Hardman, 2008). The current rationale for PE in Lithuanian schools is encompassed within a more holistic philosophy of personal development in which physical and health literacy have a significant presence. Indeed, the European Parliament Resolution (2007) referred to PE as one of the most important means of social integration at school and the only discipline concerned with pupils' healthy lifestyle preparation adding that during PE lessons attention is drawn to pupils' physical and mental development and essential social values, which encompass honesty, self-discipline, solidarity, team spirit, tolerance and fair play. Thus, in recent years PE has been granted an expanded role and, as a relatively uniquely placed school subject, it has been endowed with a broad-brush scope and potential. This extended role marks a significant transition from a measured performance-based model in the former Soviet times to a holistic process-based model in present-day Lithuania. Thus, educational objectives and content have changed and the evaluation (formerly limited to assessment) of educational results as a component of the educational process is changing from education for evaluation into evaluation for successful education. An outstanding issue remains: what is the extent to which the content and normative assessment of performance achievement in PE lessons in the former Soviet Republic of Lithuania influenced the present lifestyle and physical activity engagement of the then school pupils.

The teacher and the pupil are the main participants in the evaluative assessment process of pupil progress and achievements in (and beyond) PE lessons. The main tasks for the PE teacher are to gauge the pupil's potential to learn and understand, to identify any problems and gaps, to differentiate and individualise work and to choose appropriate content activity and learning-teaching methods. The main tasks for the pupil are self-knowledge, recognition of own strengths and weaknesses and evaluation of own progress and achievements (Emeljanovas & Trinkuniene, 2011). In accord with the theory of self-determination, internal motivation correlates with other positive results during Physical Education lessons, such as levels of effort and persistence, satisfaction with a task and the way it is performed, the need to be physically active, concentration, positive affects and search for challenges. PE has the propensity to ground later lifestyle patterns (Murcia, Coll, & Perez, 2009), hence an important objective for PE is to educate pupils as physically active persons over the full lifetime.

Achievements in PE may be defined as accumulative developmental changes in behaviour and cognition influenced by a range of movement experiences: establishment of internal motivation and identity of learners has a positive effect on the "growth" of cognitive skills and learning of movements. Partial or lesser internalisation where inappropriate levels of behavioural development and performance capability may inhibit positive progress just as external regulation and deficiencies in an individual's actions might have a negative effect on knowledge and movement skills. With regard to the provisions of self-determination theory, the hypothesis raised in the study on which this article is based, is that lack of information about progress during PE lessons and the fear of (or anxiety about) normative evaluation (more accurately termed "assessment" in the former Soviet Union countries more than 20 years ago) did not motivate the individual to be physically active in adulthood.

Research shows that pupil enjoyment derived from physical activity during PE lessons might also be important in motivating people to lead a physically active life and to choose physical activity, which has a beneficial effect on health and well-being (Molt, et al., 2001). Pleasure (enjoyment, free from fear of assessment) is a positive influence factor, which generalises feelings and motivates participation in physical activity during PE lessons (Dishman, et al., 2005; Hashim, Grove, & Whipp, 2008; Topolski, et al., 2006). Indeed, Carroll and Loumidis (2001) observed that PE lessons might have a positive role for later physical activity if they were grounded in pleasure, not in fear of normative performance assessment, and if they had a fundamental objective such as promoting pupils' physical competence, intrinsic motivation and enjoyment.

Assessment of pupils' achievements and progress during PE is a relevant educational issue across

the world (Roach, Beddow, Kurz, Kettler, & Elliott, 2010). Internationally, scholars (James, Griffin, & Dodds, 2009; Penney, Brooker, Hay, & Gillespie, 2009; Collier, 2011) after an analysis of the tendencies of assessment in PE, have raised the following issues: what the object of assessment should be (innate capabilities, progress and achievements, actions of tactics and/or technique, readiness for the lesson, or achievements in informal education); how positive communication and cooperation relationships between the teacher and the pupil should be maintained during the assessment; how assessment could serve as a stimulus for the pupil; and what the opinion is of the pupils (the main participants of the process of PE at school). Larson (2006), Chow, McKenzie, and Louie (2008), as well as Zhang, Solmon, and Gu (2012) revealed the importance of a positive environment during PE lessons in which the teacher shows care about pupils and expresses appreciation of their efforts. Cothran and Ennis (2000) have established that pupils have a good opinion about teachers who care about them, cherish positive cooperation and teacher – pupil communication relationships and motivate pupils through the assessment process. When pupils feel that they are "protected" during PE lessons, there is a strong possibility that their physical activity engagement will increase in adulthood (Ennis, 1999). Such research evidence provides further grounding for our assumption that the former Soviet Union PE lessons, designed to inculcate preparation for labour productivity and home defence, underpinned with requirements to pass the GTO norms, were not conducive to encouraging or sustaining an individual's participation in physical activity in adulthood.

When an assessment system places too much emphasis on final decisions concerning pupils' knowledge, it is often incompatible with educational objectives and intended outcomes (Emeljanovas & Trinkuniene, 2011). The issue here is whether the then (i.e. in the former Soviet Union period) educational and teaching/learning methods corresponded with the educational objectives for an individual to remain physically active during adulthood. Increasingly, researchers are currently seeking ways to achieve quality of education and hence the search for an answer to the present research problem question as to whether there is a relationship between the assessment system in PE in the former Soviet Union times (more than 20 years ago) and physical activity levels of today's adults is highly pertinent.

Methods

Participants

The research sample comprised 1,115 participants (male and female, over 35 years of age) representing the Republic of Lithuania population. Personal data used for statistical analysis of results met the research requirements: the sample subjects voluntarily agreed to participate in the research and responded to all the questionnaire items.

Instruments

All subjects were provided with the Rapid Assessment of Physical Activity (RAPA) and Evaluation System in Physical Education in the former Soviet Union Questionnaire.

The nine-item descriptive scale RAPA was intended to establish an individual's present physical activity engagement. The RAPA was developed to provide an easily administered and interpreted means of assessing levels of physical activity among adults (Topolski, et al., 2006). Items for the RAPA are based on the Centre for Disease Control and Prevention (CDC) guidelines of 30 minutes or more of moderate physical activity on every or most days of the week (Topolski, et al., 2006). A major advantage is that it enables respondents to visualize differences in activity intensity. According to RAPA scores participants were divided into two subgroups – physically active and physically inactive. The good criterion validity, good sensitivity and specificity of the RAPA are well-established: criterion validity (Spearman**)** with the Community Healthy Activities Model Program for Seniors (CHAMPS*)* (r=.54). Compared to CHAMPS, RAPA also shows good sensitivity and specificity – .81 and .69 respectively. It shows good discriminant validity compared to energy expenditure derived from CHAMPS, in that RAPA is better at discriminating energy expenditure (low and high levels) compared to Behavioral Risk Factor Surveillance System *(*BRFSS*)* physical activity questions or the Patient-centred Assessment and Counselling for Exercise (PACE*)* survey (Topolski, et al., 2006). Further testing is required to establish reliability. The questionnaire was translated into Lithuanian and pilot study was performed to demonstrate the validity of the Lithuanian version of the RAPA (Cesnaitiene, Sipaviciene, Juodzbaliene, Mockus, & Lietuvninkaite, 2008).

The Evaluation System in Physical Education in the former Soviet Union Questionnaire comprised 30 items divided into separate blocks: respondents' attitudes towards the assessment system in PE in the former Soviet Union, social characteristics of evaluation by the individual and the teacher, assessment influence on respondents' physical activity, attitudes towards enjoyment experienced during PE lessons and towards the relevance of those lessons in the past and at present.

Each item was rated on a 5-point Likert scale ranging from totally disagree (1) to totally agree (5). Eight items, aimed to reveal pupils' attitudes

towards the assessment in PE in the former Soviet Union, comprised the following: Had progress and achievements acquired during PE lessons been graded?; Had knowledge and capability to apply that knowledge, effort, physical characteristics, application of technique and tactics, and outcomes of "informal" education been assessed during the lessons, or had norms (to run, to jump, to throw etc.) been established and graded accordingly?

Ten items aimed to reveal the pupils' attitudes towards the social characteristics of assessment by the individual and teacher (in the former Soviet Union). For the estimation of the relationship between pupils and their PE teacher and trust during assessment, the question was posed of the correspondence of the individual's self-assessment with the teacher's assessment and whether the marks awarded determined the positive relationship between the pupil and the teacher. Questions extended to parity of PE lessons with other curriculum subject lessons and whether the PE teacher had the same status as other subject teachers. The importance of assessment in general was explored through the following exemplar statements: "I learn for myself, not for the mark"; "The mark is more important to my parents, not to me"; "I did not want to lag behind my friends"; and "I study only for marks".

Five items aimed to reveal the influence of assessment on physical activity in the past and at present. The influence of assessment on pupils' physical activity during and after PE lessons was explored through questions such as: Did assessment encourage you to be physically active during PE lessons?; Did assessment encourage you to be physically active after PE lessons?; and Did underestimation of your efforts during PE lessons determine your physical activity engagement at present?

Seven items aimed to reveal attitudes towards the influence of assessment on motivation to participate in physical activity, to enjoyment experienced during PE lessons, and to the relevance of those lessons in the former Soviet Union times and at present. Individuals were asked whether they liked the PE lessons when graded on the required norms; when they could play football, basketball or any other game; and when they had to perform gymnastics for a mark. They were also asked whether participation in PE lessons motivated them to engage in regular physical activity, whether they understood the value of physical activity for quality of their life and healthy lifestyle; whether participation in PE lessons fostered self-confidence and desire to remain physically active and/or to participate in sport, and whether it contributed to their progress.

Cronbach alpha value calculation of .73 showed sufficiency of internal consistency for the overall questionnaire and thus the feasibility of the research questionnaire. As evidence of external validity of the questionnaire are the results of the study of Lithuania respondents of two different gender groups (Emeljanovas & Trinkuniene, 2011). It was established that there were no significant differences between the respondents' attitudes towards progress and achievements in PE lessons in the different gender groups.

Test-retest reliability was established using a pilot study by collecting data from 50 participants not included in the sample. After one month the questionnaire was readministered to the same respondents. The correlation (Spearman's rho) of .86 confirms the satisfactory degree of test-retest reliability.

Procedure

The research was undertaken between October 2012 and April 2013 with Lithuanian inhabitants aged 35 years and older randomly sampled from the population register. The participants were invited by a letter to attend local Health Offices at various urban locations. For those who did not attend, a reminder invitation was sent. Those who did not attend after the second invitation or those who had declined the invitation to participate in the research by phone were not considered as participants. Each subject was asked to sign a participation consent form either on arrival at the Health Office or at home. Specialists in the public Health Offices collected the completed questionnaires. Ethical and legal research principles were followed while performing the survey (the right to be intact, right not to be exploited, research usefulness, propriety, privacy, confidentiality).

Statistical analysis

Statistical research data analysis was undertaken using Statistical Package for Social Sciences (SPSS, version 17.0) program package. Chi-square criterion (χ^2) was applied for verification of the equality of subject groups data dispersion. Reliability of differences was considered as significant at $p<.05$.

In order to define how past assessment in PE correlates with physical activity at present, binary logistic regression was applied, where the odds ratio (OR) and its 95% confidence interval (CI) had been calculated. Odds ratio was considered as statistically significant if both CI values were lower or higher than 1. Before application of the binary logistic regression, survey data from the Evaluation System in Physical Education in the former Soviet Union Questionnaire was separated by placing values totally disagree (1), disagree (2), and it's hard to tell (3) in the category disagree, and values agree (4) and totally agree (5) – in the category agree.

Results

To establish the reliability of differences among sample individuals who are physically active and those who are not, the χ^2 criterion was applied for data dispersion. Research findings showed that in half of the statements (15 out of 30) of the Evaluation System in Physical Education in the former Soviet Union Questionnaire the statistically significant differences between those physically active and those who are not physically active were established (Table 1; all values of the Questionnaire are presented in Annex 1). Of note is that those individuals who are not physically active at present disagreed ($p<.05$), or totally disagreed with the majority of statements (13 out of 15).

Table 1. Evaluation (in percentage) of the PE lessons that took place more than 20 years ago

Evaluated proposition	Present physical activity	Evaluation					$\chi^2(2)$; P
		Totally disagree	Disagree	Difficult to answer	Agree	Totally agree	
4. Effort during PE lesson was assessed	Characteristic	18.8	25.0	11.9	29.4	15.0	16.64
	Uncharacteristic	22.2	33.0	16.1	17.7	11.0	p<.01
5. Motor skills were assessed during PE lessons	Characteristic	3.8	1.2	18.1	40.6	36.3	16.00
	Uncharacteristic	1.5	6.5	11.5	45.1	35.4	p<.01
10. Underestimated assessment	Characteristic	28.8	34.4	25.6	7.5	3.8	17.60
	Uncharacteristic	16.3	33.5	31.8	10.9	7.4	p<.01
11. Overestimated assessment	Characteristic	26.9	26.9	34.4	8.8	3.1	18.79
	Uncharacteristic	15.1	33.0	33.4	9.6	8.9	p<.01
12. Assessment mark determined my positive relationship with a PE teacher	Characteristic	33.1	31.3	27.5	6.3	1.9	15.98
	Uncharacteristic	20.5	36.0	28.0	10.8	4.7	p<.01
13. I studied for myself, not for the assessment	Characteristic	23.8	21.3	12.5	16.9	25.6	11.67
	Uncharacteristic	25.3	29.8	14.3	14.3	16.1	p<.05
16. I studied for the assessment only	Characteristic	26.3	25.0	13.8	18.1	16.9	10.01
	Uncharacteristic	17.1	23.4	17.7	24.4	17.5	p<.05
17. PE subject status was the same as other subjects	Characteristic	8.8	26.3	17.5	20.6	26.9	9.77
	Uncharacteristic	11.1	22.9	12.0	30.5	23.5	p<.05
18. PE teacher status was the same as other subject teachers	Characteristic	15.6	23.8	23.1	16.3	21.3	28.62
	Uncharacteristic	6.0	35.0	25.3	19.8	13.9	p<.001
20. Progress and achievements assessed by marks stimulated me to be physically active after the lessons	Characteristic	11.3	35.0	25.0	11.9	16.9	19.50
	Uncharacteristic	10.5	44.7	22.2	15.4	7.2	p<.01
21. Progress and achievements assessed by marks made an impact on my present day physical activity participation	Characteristic	15.6	20.6	18.8	19.4	25.6	15.60
	Uncharacteristic	9.9	22.7	15.5	32.5	19.4	p<.01
24. I enjoyed participation in PE classes where performance grades were awarded for performance levels (run, jump etc.)	Characteristic	20.0	24.4	12.5	21.3	21.9	15.85
	Uncharacteristic	20.5	38.8	7.9	17.2	15.6	p<.01
26. I enjoyed PE classes in which I had to do gymnastic activities	Characteristic	10.0	22.5	27.5	23.8	16.3	10.83
	Uncharacteristic	11.7	33.7	21.0	21.8	11.7	p<.05
27. As a result of participation in PE lessons, I acquired a commitment to physical and sporting activity	Characteristic	13.1	24.4	23.1	18.1	21.3	10.59
	Uncharacteristic	16.4	31.1	17.7	20.8	13.9	p<.05
29. Participation in PE lessons provided opportunities and experiences for enhancement of knowledge, understanding and movement skills in a variety of physical activities	Characteristic	16.9	24.4	21.9	12.5	24.4	13.92
	Uncharacteristic	18.2	34.0	17.1	15.6	15.1	p<.01

Annex 1. Evaluation (in percentage) of the PE lessons that took place more than 20 years ago

Evaluated proposition	Present physical activity	Evaluation					$\chi^2(2)$; p
		Totally disagree	Disagree	Difficult to answer	Agree	Totally agree	
1. Progress and achievements in PE lessons were assessed by marks	Characteristic	1.3	1.3	5.0	13.1	79.4	4.44
	Uncharacteristic	1.3	3.1	3.4	17.2	75.1	p>.05
2. Progress and achievements in PE lessons were assessed by credits	Characteristic	53.1	25.6	6.3	6.3	8.8	3.32
	Uncharacteristic	57.0	25.4	6.3	6.1	5.2	p>.05
3. Knowledge of PE and the ability to put it into practice were assessed during lessons	Characteristic	30.0	32.5	19.4	10.0	8.1	3.90
	Uncharacteristic	25.7	39.1	18.3	11.1	5.9	p>.05
4. Effort during PE lesson was assessed	Characteristic	18.8	25.0	11.9	29.4	15.0	**16.64**
	Uncharacteristic	22.2	33.0	16.1	17.7	11.0	**p<.01**
5. Motor skills were assessed during PE lessons	Characteristic	3.8	1.2	18.1	40.6	36.3	16.00
	Uncharacteristic	1.5	6.5	11.5	45.1	35.4	**p<.01**
6. Exercise technique and tactics were assessed during PE lessons	Characteristic	6.3	30.0	25.0	23.1	15.6	4.35
	Uncharacteristic	6.3	35.1	23.6	24.5	10.6	p>.05
7. Informal education results were assessed in PE lessons	Characteristic	16.3	39.4	23.1	12.5	8.8	4.41
	Uncharacteristic	18.7	36.6	27.3	11.9	5.3	p>.05
8. Motor skills (to run, to jump, to throw) and rate of mastering were assessed in PE lessons	Characteristic	1.9	6.9	6.9	26.3	58.1	8.05
	Uncharacteristic	1.6	7.1	7.3	37.0	47.0	p>.05
9. Self-assessment coincided with the assessment of PE teacher	Characteristic	3.1	22.5	22.5	24.4	27.5	7.75
	Uncharacteristic	5.8	23.5	27.1	24.6	19.1	p>.05
10. Underestimated assessment	Characteristic	28.8	34.4	25.6	7.5	3.8	17.60
	Uncharacteristic	16.3	33.5	31.8	10.9	7.4	**p<.01**
11. Overestimated assessment	Characteristic	26.9	26.9	34.4	8.8	3.1	**18.79**
	Uncharacteristic	15.1	33.0	33.4	9.6	8.9	**p<.01**
12. Assessment mark determined my positive relationship with a PE teacher	Characteristic	33.1	31.3	27.5	6.3	1.9	**15.98**
	Uncharacteristic	20.5	36.0	28.0	10.8	4.7	**p<.01**
13. I studied for myself, not for the assessment	Characteristic	23.8	21.3	12.5	16.9	25.6	**11.67**
	Uncharacteristic	25.3	29.8	14.3	14.3	16.1	**p<.05**
14. The assessment was of greater importance for my parents than me	Characteristic	45.6	28.8	17.5	6.3	1.9	3.86
	Uncharacteristic	42.2	33.5	13.9	6.7	3.7	p>.05
15. I wanted to keep up with my classmates	Characteristic	15.0	13.8	15.0	33.1	23.1	7.61
	Uncharacteristic	8.8	17.4	17.0	36.2	20.6	p>.05
16. I studied for the assessment only	Characteristic	26.3	25.0	13.8	18.1	16.9	**10.01**
	Uncharacteristic	17.1	23.4	17.7	24.4	17.5	**p<.05**
17. PE subject status was the same as other subjects	Characteristic	8.8	26.3	17.5	20.6	26.9	**9.77**
	Uncharacteristic	11.1	22.9	12.0	30.5	23.5	**p<.05**
18. PE teacher status was the same as other subject teachers	Characteristic	15.6	23.8	23.1	16.3	21.3	28.62
	Uncharacteristic	6.0	35.0	25.3	19.8	13.9	**p<.001**
19. Progress and achievements assessed by marks stimulated me to be physically active in PE lessons	Characteristic	9.4	18.8	20.0	30.0	21.9	5.99
	Uncharacteristic	7.6	27.9	17.9	27.5	19.1	p>.05
20. Progress and achievements assessed by marks stimulated me to be physically active after the lessons	Characteristic	11.3	35.0	25.0	11.9	16.9	**19.50**
	Uncharacteristic	10.5	44.7	22.2	15.4	7.2	**p<.01**
21. Progress and achievements assessed by marks made an impact on my present day physical activity participation	Characteristic	15.6	20.6	18.8	19.4	25.6	**15.60**
	Uncharacteristic	9.9	22.7	15.5	32.5	19.4	**p<.01**
22. Relations with a PE teacher made an impact on my present day physical activity participation	Characteristic	16.3	25.0	26.3	13.1	19.4	8.60
	Uncharacteristic	11.9	31.8	19.7	17.6	19.0	p>.05

23. Underestimated efforts in PE lessons made an impact on my present day physical activity participation	Characteristic	26.9	23.8	15.6	21.9	11.9	5.03
	Uncharacteristic	19.5	24.5	16.1	25.8	14.1	p>.05
24. I enjoyed participation in PE classes where performance grades were awarded for performance levels (run, jump etc.)	Characteristic	20.0	24.4	12.5	21.3	21.9	**15.85**
	Uncharacteristic	20.5	38.8	7.9	17.2	15.6	**p<.01**
25. I enjoyed PE classes, in which games (e.g. basketball, football etc.) were played	Characteristic	5.6	11.3	14.4	30.0	38.8	7.90
	Uncharacteristic	5.4	17.7	13.0	34.1	29.7	p>.05
26. I enjoyed PE classes in which I had to do gymnastic activities	Characteristic	10.0	22.5	27.5	23.8	16.3	**10.83**
	Uncharacteristic	11.7	33.7	21.0	21.8	11.7	**p<.05**
27. As a result of participation in PE lessons, I acquired a commitment to physical and sporting activity	Characteristic	13.1	24.4	23.1	18.1	21.3	**10.59**
	Uncharacteristic	16.4	31.1	17.7	20.8	13.9	**p<.05**
28. As a result of participation, I understood the essential role of physical education in contributing personal well-being and to a balanced healthy, active lifestyle	Characteristic	20.0	34.4	19.4	11.9	14.4	7.33
	Uncharacteristic	15.2	38.8	14.7	17.5	13.8	p>.05
29. Participation in PE lessons provided opportunities and experiences for enhancement of knowledge, understanding and movement skills in a variety of physical activities	Characteristic	16.9	24.4	21.9	12.5	24.4	**13.92**
	Uncharacteristic	18.2	34.0	17.1	15.6	15.1	**p<.01**
30. Participation in PE lessons made me determined and committed to achievement and improvement	Characteristic	11.3	31.9	20.0	16.3	20.6	4.73
	Uncharacteristic	10.9	34.1	24.6	15.8	14.6	p>.05

It is essential to point out that the majority (51.3%) (p<.01) of those subjects who are physically active at present indicated total disagreement or disagreement that they had studied only for a mark (the proportion of subjects who are physically inactive at present was lower at 40.5%).

The data showed that just over a third (36.2%) (p<.01) of those subjects who are physically active at present, indicated that they totally disagree or disagree that the graded assessment of progress has had an influence on their physical activity at present (the proportion of subjects who are physically inactive at present was lower at 32.6%).

Research findings showed that the majority (80.5%) (p<.01) of physically inactive respondents indicated that they agree or totally agree that physical characteristics had been assessed during PE lessons, and 76.9% of physically active respondents indicated that they agree or totally agree that physical characteristics had been assessed during PE lessons.

Notably, the opinion about whether assessment of progress and achievements in grades actually motivated physical activity engagement after school differs (p<.01) between the physically active and physically inactive subject groups: less than a third (28.8%) of physically active respondents indicated that they agree or totally agree that graded assessment of progress and achievements motivated them to stay physically active after school as did 22% of physically inactive respondents.

Links between assessment in Physical Education in the former Soviet Union period and an individual's physical activity at present are even more obvious after OR estimation (Table 2).

Calculations confirmed that the disagreement concerning the evaluation of effort during PE lessons increases the possibility of being physically inactive at present by 1.65 times. A respondent's disagreement that the mark determined the positive relationship between the pupil and the teacher increases the possibility of being physically inactive at present by 2.12 times. Disagreement with the realisation that physical activity during PE lessons can contribute to quality of life and healthy lifestyle increases the possibility of being physically inactive at present by 2.20 times.

Table 2. Links between the evaluation during lessons of Physical Education that took place more than 20 years ago and respondents' (N=1115) physical activity at present

Variables	Characteristic physical activity		Uncharacteristic physical activity		OR	95% CI
	N	%	N	%		
Effort during PE lesson was assessed						
Agree (n = 342)	45	13.2	297	86.8		
Disagree (n = 773)	115	14.9	658	85.1	1.65*	1.05 – 2.61
Assessment mark determined my positive relationship with a PE teacher						
Agree (n = 161)	13	8.1	148	91.9		
Disagree (n = 954)	147	15.4	807	84.6	2.12*	1.14 – 3.95
As a result of participation, I understood the essential role of physical education in contributing personal well-being and to a balanced healthy, active lifestyle						
Agree (n = 342)	42	12.3	299	87.7		
Disagree (n = 773)	118	15.2	656	84.8	2.20**	1.30 – 3.72

Note. OR=odds ratio; 95% CI=95% confidence interval. * p<.05; ** p<.01.

Discussion and conclusions

This paper contains an analysis of the difference in the attitudes towards the assessment of achievement, social characteristics of teacher's assessment, the influence of assessment on physical activity in the past and at present, as well as attitudes towards enjoyment experienced during PE lessons, and the relevance of those lessons towards motivation for physical activity engagement during PE lessons in the former Soviet Union times of individuals aged 35 and older, who are physically active and those who are physically inactive. The hypothesis that the absence of information about progress during PE lessons and fear of normative assessment in the former Soviet Union period did not motivate individuals to engage in physical activity in adulthood was confirmed by the findings.

As indicated previously, the undervaluation of effort (and half of respondents who are physically inactive at present indicated that their efforts were under-estimated) during PE lessons increased the possibility of being physically inactive at present by 1.65 times; the GTO (Ready for Labour and Defence) mark did not engender a positive relationship between the pupil and the teacher and increased the possibility of being physically inactive at present by 2.12 times; and participation in PE lessons did not motivate individuals to realize the value of physical activity in contributing to the quality of life and healthy lifestyle, the factor which increased the possibility of being physically inactive at present by 2.20 times.

Research findings confirmed the theory of self-determination (Murcia, et al., 2009) that effort and satisfaction from task and its performance lays the foundations for later lifestyle. However, pupils in the former Soviet Union period did not receive information about their progress in PE lessons; or instead, assessment of GTO norms prevailed and did not motivate individuals to be physically active in adulthood. This accords with Shepard and Trudeau (2000) observations that pupils' further lifestyle, physical activity, development of their attitudes mostly depend on the character of PE lessons, when they were teenagers. Similar data have been obtained in other research (Snel, Twisk, van Mechelen, & Kemper, 1995; Taylor, Blair, Cummings, Wun, & Malina, 1999). Other retrospective research has shown that when a person is obliged to perform actions and does not experience enjoyment, physical activity engagement decreases in adulthood (Snel, et al., 1995). The importance of pleasure and enjoyment during PE lessons is strongly emphasized in the latest publications within this research domain (Grasten, Jaakkola, Linkkonen, Watt, & Yli-Piipari, 2012; Scarpa, Carraro, Gobbi, Nart, 2012).

Our data indicate that assessment is important for physical activity engagement after school. This is contrary to earlier findings (Emeljanovas & Trikuniene, 2011), which suggested that for most of research sample subjects (boys and girls) assessment influenced physical activity only during PE lessons, and did not influence physical activity engagement in education or leisure time. Research findings showed that less than a third (28.8%) of physically active respondents indicated that graded assessment of progress and achievements motivated them to stay physically active after school (22% of physically inactive respondents indicated the same). Perhaps this can be explained by the fact that, as other research (Shepard & Trudeau, 2000)

has shown, long-term influence of PE lessons on physical activity in adulthood is relatively weak. The strongest influential factor emanates from the pleasure experienced during PE lessons (Adams & Brynteson, 1992). Research findings presented in this paper reveal that about two thirds of pupils have not had their efforts and progress assessed and only physical characteristics had been assessed, thus corresponding with other research data (Brynteson & Adams, 1993; Welk, 2008).

Of interest are questionnaire responses on graded assessment during PE lessons. Half of the individuals who are physically active at present intimated that learning had been for other reasons than assessment; these intimations differed significantly from those of present day physically inactive individuals. It might be stated that PE teachers in the former Soviet Union times expected pupils to pass the GTO standard norms. Assessment was based on comparison of the pupils' results, which did not meet personal expectations. Teachers ignored the fact that even physically less able pupils might progress in personal physical development whilst acquiring movement skills and leading a healthy lifestyle, so teachers should assess progress instead of performance achievement and should take into account pupil's individual potential. Assessment should be used to motivate individuals to strive for personal progressive development. In this context, Russia has now rendered the GTO norms as obsolete (Gromyko, Lysova, & Shubina, 2007).

The findings of our research might be interpreted so that each individual has her/his own pace of maturity. Children of the same age often differ in their physical, cognitive and social development and health. Innate physical capabilities depend on innate characteristics, genetic heredity (Bouchard, 1993), hence arguably they cannot be changed, so consequently they should not serve as a criterion for assessment, because the progress made using acquired knowledge and personal skills should be assessed instead of the performance achievement norm. This information about changes in personal physical condition helps pupils to have greater awareness of their strengths and weaknesses. Therefore, tasks should be set to facilitate successful endeavour. Promotion of appropriate emotions during PE lessons is an important way to positively affect pupils' attitudes towards the propensity of PE (Murcia, et al., 2009). Assessment using GTO norms, as in the former Soviet Union period should be avoided, because pupil should not be made to feel inferior in comparison with peers. Such a psycho-social outcome could potentially result in decrease in motivation and desire to participate in PE lessons. Everybody should have an opportunity to improve skills while participating in various exercises to foster the development of positive attitudes towards PE and physical activity during PE lessons (O'Conner, 2002). Research suggests that the purpose of any activity should be explained, so that pupils can understand why it is important to perform some kind of movement and the purpose of its application (Collier, 2011).

Survey respondents' attitudes towards the significance of graded assessment of progress and achievements during PE lessons for physical activity engagement at present is not surprising, since 51% of subjects who are physically active at present have indicated that they agree or totally agree that graded assessment of progress and achievements during PE lessons have been influential in limiting the level of physical activity at present. This might be explained by the fact that participation in PE lessons in the former Soviet Union times did not inspire self-confidence and desire for physical activity or sports engagement. It should be noted that other research has been conducted into the influence of participation in PE lessons on pupils' physical activity (Diamant, Babey, & Wolstein, 2011) though there is a lack of data related to the influence of assessment on a person's physical activity in adulthood.

Arguably, "post hoc" studies seeking to uncover causal or associative links with past activity employing an interview questionnaire procedure inherently raise problematic issues, not least of which are perceptions and possible distortions related to lapse of time and intervening influences on attitudes and behaviours. This present study is no exception. Hence, caution needs to be taken in terms of interpretation of individuals' "hindsight" perceptions and the degree of reliability of data gathered. Nonetheless, this pioneering study does reveal some interesting findings, which collectively demonstrate what can be viewed as negative outcomes of performance achievement-related PE curricula in the former Soviet Republic of Lithuania and especially so from the post-school life-long physical activity engagement perspective. The study was pioneering as a first attempt nationally, and possibly regionally, to seek correlation between the school PE curriculum, administered more than 20 years ago in the context of sovietisation policies and practices, and present day physical activity participation in a liberalised, more humanistic and democratic setting.

An important tasks for a teacher is to understand a pupil's motivation and to convey positive motivational experiences, features which were missing in the former Soviet Union period. A consequence is that PE teachers face a big challenge: they have to resolve the issue of how to promote physical activity not only in and outside of school, but also beyond school in adulthood. Emanating from the present research findings is a message that today's PE teachers should seek a range of means for promoting physical activity, including hitherto unconventional forms of physical activity, because in this

study almost 60% of individuals who are physically inactive at present did not enjoy PE lessons in which they were graded on running, jumping and throwing etc. norms. As this present study has demonstrated, the fact that effort was not taken into consideration during PE lessons increases the possibility of being physically inactive beyond school at present by 1.65 times. Additionally, the absence of a positive correlation between graded assessment and the positive relationship between pupils and PE teachers increases the chances of being physically inactive beyond school at present by 2.12 times. Furthermore, the fact that pupils were not made aware during PE lessons of the relevance of physical activity to the quality of life and healthy lifestyle increases the possibility of being physically inactive at present by 2.20 times.

Of interest in progressing the research would be to determine the extent to which variable sample groups based on different sex (male/female) and levels of education have been influenced by their PE teachers and the then PE curriculum. It is also suggested that research on the items investigated in this study should be extended to other former socialist bloc countries to establish whether the former 'sovietised' PE curricula models had any wider regional significance in post-school years physical activity engagement amongst adults twenty years on.

Finally, the statement that PE lessons and fear of normative assessment in the former Soviet Union period did not motivate individuals to engage in physical activity in adulthood was confirmed by the findings.

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