

# Esthetic aspects of physical education classes for girls

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## Abstract

*In the last few decades it has become necessary to respect pupil's inclination towards physical activity when preparing the curriculum for the school physical education classes. Girls univocally prefer physical activity with esthetic orientation. We observed 38 girls (15.8 years; 54.4 kg; 168.2 cm) at a high school, which took part in eight physical education lessons in rhythmic gymnastics. Accelerometers Caltrac, heart rate monitors Polar and pedometers Omron were used to monitor the physical load and intensity of physical activity. Standardized questionnaires about the girls' attitude toward physical education classes were applied. An emphasis on esthetic presentation resulted in lowered physical load. Girls accepted "estheticization" positively and appreciated the contents of the units.*

## Introduction

The development of physical education in most school systems was characterized by the struggle for the recognition of girls' physical education and in the last few decades by a struggle for respecting the specificity of physical education for girls. In spite of improvements in the curricula and in the conception of physical education, numerous problems persist. First, the effort to preserve traditions in physical education, national values and educational goals often conflicts with the fast-changing nature of girls' sporting interests and hierarchy of life values. Paradoxically, there are some new trends which "rub out" the boy - girl differences, that is trends toward more aggressive activities and hazardous motor activities, elimination of differences in the popularity between formerly typical boy sports

and typical girl sports and games and so on. An important factor is the gradually increasing inclination of boys and girls towards recreationally oriented motor activity, which grows with rising age, and also the increasing interest in those motor activities that can be performed in coeducational institutions.

## *Starting points and the research problem*

The basis of the research problem was an inclination and preference to the conception of movement activities in girls. This preference and the structure of interest in sports of the youth was examined through a standardized questionnaire at 49 elementary schools and 58 middle and high schools in the central Europe. The survey was part of a large project on sporting interests during the years 1996-1998 (Czech Republic, Poland, Germany and Slovak Republic). Altogether 4336 girls participated in the project (Frömel, Novosad, & Svozil, 1999), (Table 1). The findings indicated that girls at elementary, middle and high schools prefer, in absolute majority, the esthetic character of movement activity. This preference is evident in the rank of interests in each sports branch: apart from swimming and skating, dance and aerobics predominate. (Sport branch is understood as a complex term for physical activity of similar type; for example, term "dance" covers all types of dancing activity - Latin, country, disco and so on.)

At present, however, physical education does not respect and not sufficiently exploit the preferences, in spite of various practical recommendations (Zakrajsek & Carnes, 1986; Zakrajsek, Carnes, & Pettigrew, 1994). One of the causes may be the fact that the esthetic character of movement activity is not so much in the

foreground of the interests of PE women teachers and university female students who are preparing for a teaching career. In didactic conceptions in Europe, Grössing (1993) has the most systemic approach to “estheticization”. He puts “sport culture on the same level as game culture, health education and esthetic culture within movement concept” (Grössing, 1993, p. 24).

The less positive attitude of girls to physical activity with a higher physical load, especially with higher intensity, is another starting point. An attitude of girls and boys to physical education classes with different physical load was examined by a standardized questionnaire (see Appendix) in 1197 girls and 845 boys at elementary, middle and high schools (Frömel et al., 1999). The results indicated that one of the causes of girls’ less positive attitude toward physical education classes with higher load (but sufficient enough for girls’ fitness) is an emotive reason (not enough satisfaction of physical activity, less enjoyment and strain, little of favorable emotive atmosphere). Lower interest in fitness and competitive sport of girls is another important and compelling factor. To sum up, in central Europe girls are more interested in sport activities that are not too physically demanding. With increasing physical load in physical education classes for girls, their evaluation of these lessons gets worse (Frömel, Tomik, Góna, Groffik, & Svozil, 1998). This does not validate to some degree for favorite PE classes, such as those that include dance and aerobics.

The third and no less important starting point is the lower intensity of movement activity of girls in the weekly routine than of boys (Frömel et al., 1999; Sallis & Patrick, 1994). During the monitoring of physical activity with Caltrac accelerometers, the energy expenditure during girls’ movement activity at elementary and middle schools was found to be  $8.91 \text{ kcal} \cdot \text{kg}^{-1} \cdot \text{day}^{-1}$  (in boys  $10.95 \text{ kcal} \cdot \text{kg}^{-1} \cdot \text{day}^{-1}$ ) and at high schools  $8.94 \text{ kcal} \cdot \text{kg}^{-1} \cdot \text{day}^{-1}$  (in boys  $10.75 \text{ kcal} \cdot \text{kg}^{-1} \cdot \text{day}^{-1}$ ).

One way how to increase the esthetic character

of physical education (that is applying characteristic attributes of esthetics in movement activities, pupils and teachers behavior and conditions) for girls is to stress “estheticization” of the lessons. This “estheticization” is understood as using the esthetic features repeatedly:

- to use a suitable esthetic motion content (with esthetic “charge”, it means esthetically valuable, potential and with high level of esthetics),
- to apply esthetic episodes,
- to put more emphasis on esthetic performance of motions,
- to use music that motivates esthetic movement performance,
- to apply proper choreography of movement variations,
- to wear adequate and stylish physical education attire,
- to use suitable color scheme and “esthetic character” of the requisites used and their eventual harmonizing with the PE clothes,
- to determine esthetic settings (cleanliness, lighting, mirrors, reproduced music, etc.).

It is also shown that the creatively esthetic effect, which is the basic part of the knowledge of rhythmic gymnastics (Côté-Laurence, 1998) can be applied particularly well in creatively oriented PE lessons.

#### *Purpose*

The primary aim of the research was (a) to analyze physical education classes with esthetic orientation for high school girls (number of steps, energy expenditure during physical activity and time spent in different physiological zones), (b) to compare the data obtained by Caltrac and Omron and (c) to find out girls’ attitude to such an oriented PE classes and intensity of their physical load (time spent above anaerobic threshold and in the zone of 70-85% of maximum heart rate) during the lessons.

Estheticization of physical education classes in rhythmic gymnastics is supposed to lower

intensity of girls' physical activity. The esthetic performance of physical activity is to some degree a contradiction to the fitness conception. But often an optimal pace, a higher motor content, esthetic positions of body parts and other esthetic elements can be physically more demanding than an identical but carelessly performed motor activity.

Estheticization of physical education classes in rhythmic gymnastics is expected to positively affect the appraisal of these classes, made by the girls themselves. It is not clear whether the girls associate the esthetic character of the movement activity more with the esthetic content (sports branches or disciplines) rather than with the esthetic conception and esthetic motor performance.

## Methods

### *Participants*

The research involved participation by 38 girls (mean  $\pm$  SD; age  $15.8 \pm 0.3$  (yr.), weight  $54.4 \pm 5.6$  (kg), height  $168.2 \pm 3.9$  (cm)) from two classes of a high school in Olomouc, the Czech Republic. This set of girls was conveniently assigned.

### *Design and Procedure*

Physical education classes of the rhythmic gymnastic were chosen for the research because of material settings, appeal of the rhythmic gymnastics to girls and the meaning of esthetics in this kind of the lessons. Four physical education classes of the rhythmic gymnastics of different types were realized in each class: habitual (normal, common, usual and performed as well as possible; without any intervention), creative (with characteristic creative attributes - originality, fluency, sensitivity, flexibility, imagination), habitual with esthetic orientation (connection between habitual and esthetic) and creative with esthetic orientation (connection between creative and esthetic) (Figure 1). A qualified female teacher taught all eight PE classes.

### *Utilization of creative episodes:*

- to improvise on music, while the partner repeats the motion
- to make individual step variations
- to seek further opportunities for group transfer
- to complete the exercises with individual creations of supplementary motions emphasizing the esthetic character of the motor performance
- to seek suitable individual relaxation exercises

### *Utilization of esthetic episodes:*

- to seek other esthetic positions
- to add exercises with esthetic arm motion
- from known varieties to select the esthetic step variant that corresponds best to the music
- to include the motion canon - gradual repetition of esthetic performance (one girl after another)
- to focus on the esthetic "speech of the body"
- to make the pose as esthetic as possible (in front of a mirror)
- in small groups to compete in the esthetic expression of music by motion
- to emphasize the contrast between esthetic and "unesthetic" exercises
- during the whole physical education class to put emphasis on correct posture of the body and the extent of the motion

Altogether 133 subjects were measured in eight realized physical education classes because the data of 19 girls were not analyzed due to their absence in a PE class or technical problems with the devices. The physical load was diagnosed by monitoring their heart rate with "Polar" heart rate monitors (with 15-second intervals). Higher load (heart rate above  $[220 - \text{age}] \times 0.85$ ) and medium load (in the zone of 70-85% of maximum heart rate) were registered. Besides this, energy expenditure during physical activity was monitored using accelerometers Caltrac and pedometers Omron.

At the end of each lesson the girls evaluated the physical education class by filling in a standardized questionnaire that has been

successfully applied in the pedagogical researches and during teaching at schools in a last decade (Appendix). The questionnaire contains 24 questions, forming six dimensions (cognitive, emotional, health, social, relational and creative). The supplementary dimension “pupil’s role” contains eight selected questions and should help one to recognize a pupil’s status in a class and his/her share in controlling PE class. These dimensions are congruent with the dimensions included in the similar research techniques and their choice resulted from up-to-date and complex character to describe realization of a physical education class.

#### *Data analysis*

The data was analyzed with the help of special software, which transforms all registered variables to a standard length of the physical education class, that is 45 minutes, and enables to produce feedback for pupils and teachers. In statistical processing, basic statistical variables and MANOVA were used. The interventions in PE classes were considered as independent variables, 1st factor - features of creativity and 2nd factor - features of esthetics. Characteristics of physical load, intensity, steps and energy expenditure were considered as dependent variables.

### **Results and Discussion**

In physical education classes of the rhythmic gymnastics no significant differences were found in the physical load of girls in habitual and creative lessons. The only exception was the registered higher number of steps (including skips and position changes) in creative PE lessons (Table 2). The girls’ physical load was high enough and was in harmony with the requirements for this conception of the lesson. Figure 2 presents well-known characteristics of physical load and gives a clearer picture of the load in physical education classes.

It was confirmed that estheticization of motor activity deteriorates the physical load of girls.

When implementing esthetic episodes and emphasizing choreography in the lessons, the girls’ physical load will be lower than most other activities (Stratton, 1997). Because of the aims in physical education classes with this orientation and because of the level achieved in the physical load of girls, we do not regard the resulting decrease in physical load as a drawback. (For instance, the energy expenditure of  $2.10 \text{ kcal} \cdot \text{kg}^{-1} \cdot 45 \text{ min}^{-1}$  was found in volleyball classes, in athletics  $2.19 \text{ kcal} \cdot \text{kg}^{-1} \cdot 45 \text{ min}^{-1}$ , country-dance  $2.57 \text{ kcal} \cdot \text{kg}^{-1} \cdot 45 \text{ min}^{-1}$ )

The differences in observing physical activity by each monitoring device are shown in Table 3. Especially the mental, health, fitness, and other factors affect the most precise monitoring of physical activity using heart rate monitors. Monitoring using accelerometers does not sufficiently register local loads and motor activity in static positions, which is the same as for the least precise pedometers. Moreover, the energy expenditure data in pedometers are affected by the rounding off of the subject’s weight to 5 kilograms. The monitoring inaccuracies are eliminated by a comparative investigation of various types of physical education classes with the same sample sets.

On the basis of the previous surveys (Frömel, 1995; Frömel et al., 1996) it was expected that the girls would appraise the creative lessons more positively than the habitual ones. The expressively positive relationship, declared in the attitudinal dimension of the questionnaire, toward both habitual and creative PE classes and the generally very positive appraisal of both types of lessons were probably the main reason for the statistically insignificant differences (Table 4).

In all types of PE classes only 7 % of girls would prefer lessons of a different school subject instead of physical education. Only 28% of the girls would prefer independent movement activity outside school to these PE classes. A significant difference was found only in the supplementary dimension “pupil’s role”, when, as expected, the girls’ status in the didactic process became

stronger and their share in the control of the lessons increased. Thus, previous experience was confirmed by the new information - that lessons with a popular content (exercises to music) and well controlled are preferred. The preferences to the conception of physical activity are not significantly reflected in a better evaluation of the PE lessons. The effect of the esthetic approach, in context of a strong "esthetic charge", is not strong enough. The estheticization of movement activity did not affect evaluation of the lessons. Generally speaking the girls accepted the estheticization of movement activity very positively.

The preferences of interests, wishes and inclinations towards a particular specialization in physical activity of girls are often in conflict with the assessment of the realized physical activity in physical education lessons. It will be necessary to determine to what degree girls, as well as boys get more critical in the rating of realized favorite physical activities with which they have had some good experience in their out-of-school, leisure-time movement activities.

In summary, the significance of the study is to support the specificity of girls' physical activity and make a contribution to more qualitative physical education lessons. Estheticization of physical education classes proved to be suitable in order to attain the physical education aims. Girls accepted positively the estheticization of physical education lessons in rhythmic gymnastics. Realization of the esthetic proposals in physical education classes seems to be very a demanding but an essential up-to-date task for physical educators.

### Conclusions

- Estheticization of physical education classes in rhythmic gymnastics manifested itself as a generally lower physical load in girls, but the load itself was adequate and comparable with other types of lessons.
- Estheticization of physical education classes in rhythmic gymnastics did not affect the rating of lessons in girls in any significant way. The

girls rated habitual, creative and lessons with esthetic orientation very positively.

- The girls' attitude to the lessons in rhythmic gymnastics and their positive assessment is in line with the proclaimed preference for the esthetic character of movement activity.
- Estheticization and creativity in the lessons is one of the possible ways through which physical education can successfully rival the out-of-school commercial and modern trends.

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Table 1

Interest in the character of movement activity

Rank	Elementary and middle schools (n=2217 girls)	High schools (n=2119 girls)
1	esthetic	esthetic
2	fitness	recreational
3	recreational	health
4	health	fitness
5	sports (performance)	sports (performance)

Table 2

Physical load of girls in various types of PE classes of rhythmic gymnastics

Physical education classes	n	Higher load (min)		Medium load (min)		Energy expenditure (kcal•kg <sup>-1</sup> •45min <sup>-1</sup> )		Steps (number)	
		M	F	M	F	M	F	M	F
Habitual	65	5.20		16.88		2.61		2486	
			2.00		0.01		0.03		4.75*
Creative	68	4.11		16.78		2.62		2630	
Without esthetic orientation	64	5.45		18.09		2.71		2626	
			4.26*		6.43*		5.96*		4.23*
With esthetic orientation	69	3.86		15.58		2.53		2490	

Notes. Higher load - time of heart rate above anaerobic threshold, i.e. above  $(220 - \text{age}) \times 0.85$

Medium load - time of heart rate in the zone 70-85% of maximum heart rate

Energy expenditure - energy expenditure during physical activity

M - arithmetic mean

F - MANOVA

\*  $p < .05$ .

Table 3

Energy expenditure in PE classes of rhythmic gymnastics registered by heart rate monitors, accelerometers and pedometers

Physical education classes	n	PEEMIDKG (kcal·kg <sup>-1</sup> ·45min <sup>-1</sup> )		CEEPAKG (kcal·kg <sup>-1</sup> ·45min <sup>-1</sup> )		CTEEKG (kcal·kg <sup>-1</sup> ·45min <sup>-1</sup> )		OEESTPKG (kcal·kg <sup>-1</sup> ·45min <sup>-1</sup> )	
		M	F	M	F	M	F	M	F
Habitual	65	5.72		2.61		3.60		1.72	
			0.06		0.03		0.37		3.84
Creative	68	5.68		2.63		3.64		1.82	
Without esthetic orientation	64	5.88		2.71		3.72		1.80	
			4.56*		5.96*		7.57*		1.48
With esthetic orientation	69	5.52		2.53		3.52		1.74	

Notes. PEEMIDG - energy expenditure calculated from mean heart rate according to Polar

heart rate monitors

CEEPAKG - energy expenditure during physical activity according to Caltrac

accelerometers

CTEEKG - total energy expenditure according to Caltrac accelerometers

OEESTPG - energy expenditure according to Omron pedometers

M - arithmetic mean

F - MANOVA

\* p < .05.

Table 4

Evaluation of physical education classes of rhythmic gymnastics

Physical education classes	n	Attitude		Total		Pupil's role	
		M	F	M	F	M	F
Habitual	65	3.39		16.53		3.48	
			0.00		3.52		32.17*
Creative	68	3.38		17.52		4.86	
Without esthetic orientation	64	3.47		16.95		4.26	
			0.95		0.09		1.10
With esthetic orientation	69	3.29		17.11		4.45	

Notes. Attitude - positive points achieved in the attitudinal dimension of the questionnaire

(see Appendix)

Total - total sum of all positive points (see Appendix)

Pupil's role - positive points achieved in the supplementary dimension "pupil's role"

(see Appendix)

M - arithmetic mean

F - MANOVA

\*  $p < .05$ .

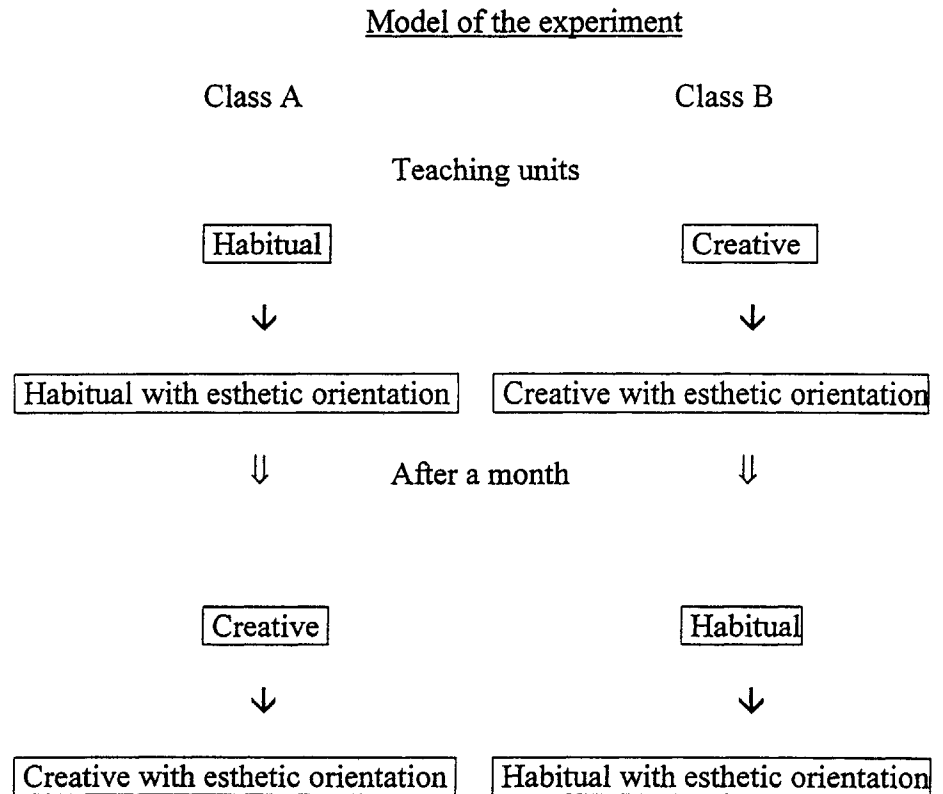


Figure 1. Structure of physical education classes.

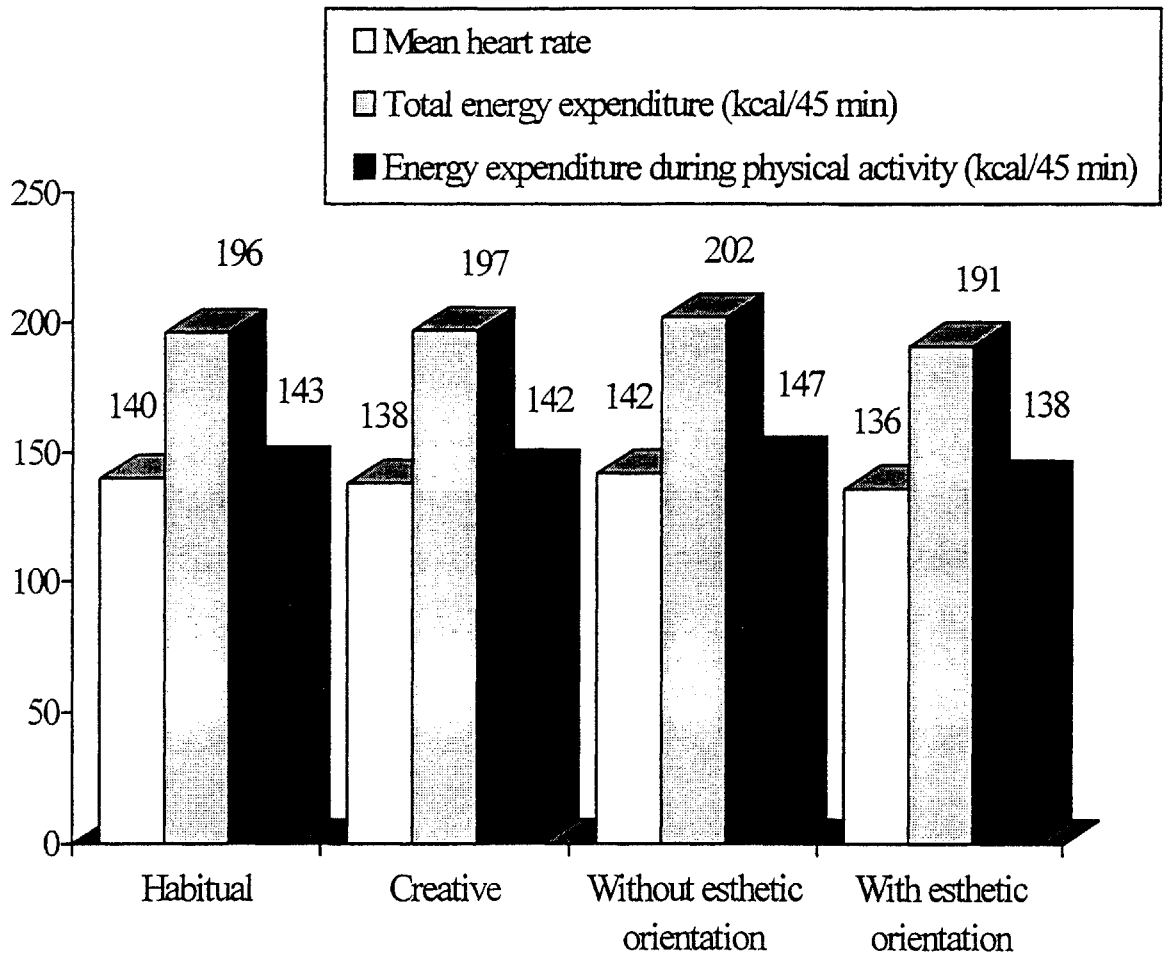
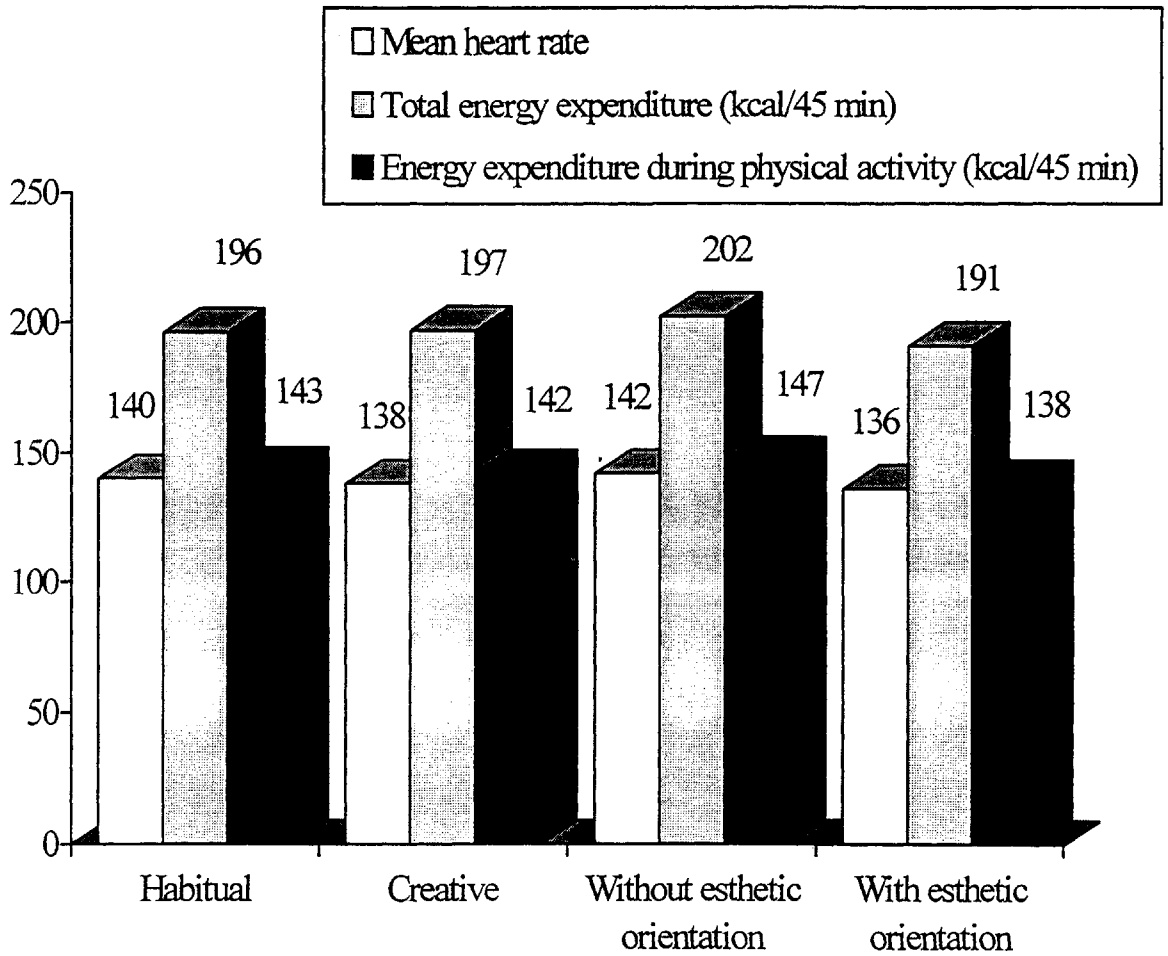


Figure 2. Mean heart rate and energy expenditure of girls in PE classes of rhythmic gymnastics.



Appendix

Questionnaire (pupils' attitude to PE lesson)

School, form, sex, date: \_\_\_\_\_

(sign X) YES NO

1. Could you identify the aim of the lesson and what the teacher was attempting to do?		
2. Was the physical activity satisfying?		
3. Were you relaxed after the class?		
4. Did the teacher behave as an adviser or friend?		
5. Would you like to have the same or a similar class next time?		
6. Did you have the chance to solve a problem on your own?		
7. Did you learn anything new?		
8. Was there a good feeling about the class?		
9. Was there a good feeling after the class?		
10. Did your schoolmates misbehave during the class?		
11. Would an extracurricular activity be better than participating in this class?		
12. Did you have a chance to make a decision in the class to do something on your own and in your own way?		
13. Did you learn any new skills or improve old ones?		
14. Was the class fun?		
15. Do you think that the class improved your fitness?		
16. Did you ask any questions during the class?		
17. Would you have preferred attending another class?		
18. Did you feel that the teacher always "directed" you?		
19. Did you give any demonstration in the lesson?		
20. Did the teacher or a classmate praise you?		
21. Did you think about your posture during the lesson? Did you do any stretching?		
22. Did you correct any mistake made by your classmate or did a classmate correct your mistake?		
23. If you had been allowed to leave the class and go home, would you have done so?		
24. Were there any surprises or new things in the class?		

Questionnaire structure

The standardized questionnaire contains 24 questions, divided into six dimensions and one supplementary dimension.

<u>Dimensions</u>	<u>Questions</u>							
I. Educational (cognitive)	- 1,	7,	13,	19				
II. Emotive	- 2,	8,	14,	20				
III. Health (fitness)	- 3,	9,	15,	21				
IV. Social (interaction)	- 4,	10,	16,	22				
V. Attitudinal	- 5,	11,	17,	23				
VI. Creative	- 6,	12,	18,	24				
<u>Supplementary dimension:</u>								
VII. Pupil's role	- 2,	4,	6,	12,	16,	18,	19,	22