

# Sport involvement, sport violence and health behaviours of Greek adolescents

ATHANASIOS PAPAIOANNOU, CALLIOPE KARASTOGIANNIDOU, YANNIS THEODORAKIS \*

**Background:** Within the context of problem-behaviour theory, this study investigated the intra-relationship between attitudes and behaviours towards exercise, sport involvement, violence in sport-related events, eating fruits, smoking and hashish or ecstasy use in a sample of Greek adolescents. Age and gender patterns are considered. **Methods:** Participants were 5991 Greek school pupils who responded to questionnaires assessing behaviour and attitudes towards health-related behaviours. **Results:** Positive associations were found between pupils' reports of violence in sport-related events, smoking and hashish or ecstasy use on the one hand, and eating fruits and participation in sport and exercise on the other. In contrast, small positive association was observed between sport involvement and violence in sport-related events. Attitudes towards health risk behaviours were inversely related to attitudes towards health-promoting behaviours, and attitudes were positively related to corresponding behaviours. Sport involvement and regular exercise decreased but smoking and use of hashish or ecstasy increased with age. More males than females participated in organized sport and violent acts in sport-related events. Males' involvement in sport violence increased with age. **Conclusion:** Sport is a suitable context for the promotion of several health-related behaviours apart from exercise. Nevertheless, the present sport structure excludes most young people and is positively linked with sport violence. A less demanding sport context should be provided for the majority of young people, particularly for females. Sport programmes designed to promote health behaviours should be encouraged. More concentrated actions to combat sport violence are required.

**Keywords:** age, exercise, Greece, health-risks, sport violence

Recently, the European Commission launched an anti-smoking campaign in collaboration with UEFA and top European World Cup players<sup>1</sup> in the belief that strong statements against smoking by European football stars will support young people in their decision not to smoke. While agreeing with this approach it is also thought important to retain a critical stance towards the role of sport in the promotion of positive health-related behaviours among young people. Research has shown strong links between engagement in violent rows in sport events, following a favourite team in the stadium and watching matches on TV,<sup>2</sup> all of which were also positively related to sport involvement.<sup>2</sup> In the present study, data are presented concerning the association of adolescents' sport violence and sport involvement with other health-related attitudes and behaviours such as smoking, drug use and healthy diet.

According to problem behaviour theory<sup>3</sup> adolescent risk behaviours are interrelated.<sup>4–6</sup> For example, existing research has shown an association between , substance use, aggressive, delinquent and sexual risk behaviours. Although the association between violent behaviour and other risk behaviours has frequently been investigated, one particular manifestation of violence, sport violence, which is very common in adolescence, has rarely been considered. In the present study, the association of fans' violent behavior in sport events with substance use such as smoking and hashish or ecstasy was examined.

Both theory and research<sup>7–10</sup> imply an association among health-promoting behaviours, such as sport involvement, exercise and healthy eating. By contrast, the association between health-promoting and health-compromising behaviours is less well

understood.<sup>10</sup> Thus, while some studies have shown that healthy diet and sport involvement are inversely related to smoking and marijuana use,<sup>9,10</sup> others have found higher rates of chewing tobacco and snuff among athletes than non-athletes.<sup>11</sup> These inconsistencies have been attributed to differences in methodology, including different statistical analyses and conducted different sets of health-promoting and health-compromising behaviours.<sup>10</sup> Few studies exist that have examined the association of sport violence with health-enhancing behaviours, although there is some evidence from a previous study<sup>2</sup> of a positive relationship of sport involvement with sport violence.

Investigating the interrelatedness among health-related behaviours without considering the meaning of these behaviours could provide a distorted picture of reality. For example, there is evidence that sport involvement can lead to sport violence when people desire winning by any means.<sup>12,13</sup> Indeed, the study showing a positive correlation between sport violence and sport involvement also revealed that this relationship was accounted for by youngsters' wanting to be better than others in sport,<sup>2</sup> while among those focusing on their personal progress in sport no association between sport violence and sport involvement was found. Hence, an association between sport involvement and sport violence does not imply that sportsmanship is necessarily linked with positive attitudes towards sport violence, nor that the sport arena is inappropriate for the promotion of positive health behaviours in adolescence. In fact, the anti-smoking campaign of the European Commission in collaboration with top European World cup players shows that in people's minds sport involvement has positive health connotations. If positive views towards sport are inversely related with attitudes towards sport violence, smoking and drug use, then sport can be considered an appropriate context to launch health promotion campaigns and develop life skills that will enable youngsters to adopt healthy lifestyles.<sup>14,15</sup> In this study, the association between attitudes towards sport and exercise involvement, sport violence, smoking, healthy diet and drug use is investigated. Attitudes were conceptualized based on a planned behaviour model<sup>16</sup> that has been proved fruitful in understanding the determinants of people's health behaviour.<sup>17,18</sup> In this model,

\* A. Papaioannou<sup>1</sup>, C. Karastogiannidou<sup>2</sup>, Y. Theodorakis<sup>3</sup>

<sup>1</sup> Department of Physical Education & Sport Science, Democritus University of Thrace, Komotini, Greece

<sup>2</sup> School of Food Technology & Nutrition, Technological Educational Institution of Thessaloniki, Thessaloniki, Greece

<sup>3</sup> Department Physical Education & Sport Science, University of Thessaly, Greece

**Correspondence:** Athanasios Papaioannou, PhD, Department of Physical Education & Sport Science, Democritus University of Thrace, Komotini, 69100, Greece, tel. +30 531 397 123, +30 31 320 569, fax +30 31 320 569, +30 531 396 23, e-mail: sakispap@otenet.gr

attitudes towards behaviour are based on beliefs about the possible outcomes of the behaviour and evaluation of these outcomes. In the present study, the association between health-related attitudes and behaviours was also examined. Because the relationship between health cognitions and health behaviours is reciprocal,<sup>19</sup> in the analysis of the associations between attitudes, the effects of behaviours are controlled for.

## METHODS

### Subjects and procedures

Questionnaires were administered to three groups of Greek pupils: 1734 aged 11 years (elementary school,  $N=906$  boys,  $N=828$  girls), 2151 aged 13 years (junior high school,  $N=1093$  boys,  $N=1058$  girls) and 2106 aged 16 (senior high school,  $N=947$  boys,  $N=1159$  girls). The selection was based on a random stratified method from 83 classes of 30 elementary schools, 87 classes of 33 junior high schools and 86 classes of 28 senior high schools. Approximately 30% of the pupils lived in Athens, a city of about 4 million people, 30% in Thessaloniki, a city of about 1 million, and the remaining pupils in four Greek towns of 50–70 thousand people each. Today the urban and semi-urban population of school pupils exceeds 95% of the total pupil population of Greece. The study was conducted with the permission of the Greek Ministry of Education and all pupils gave informed consent. Ten research assistants were employed in the data collection process. They visited the schools and administered questionnaires in classrooms. All questionnaires were anonymous. Following the researchers' instructions on how to complete the questionnaires, pupils completed the questionnaires on their own sitting quietly in their seats. Teachers were encouraged to stay away from the pupils during questionnaire completion and when pupils had finished they put them in a sealed box and left the classroom. The response rate was 100%, but 4% of the questionnaires were excluded due to a large proportion of incomplete answers.

### Instrument

#### ■ Health behaviours

Self-reports were used to assess the following behaviours:

- Vigorous sport or exercise behaviour during the last month (number of times: none, 1–5, 5–10, 10–15, 15–20, over 20).
- Involvement in organized competitive sport (YES-NO; if yes, number of days in the last week).
- Regular vigorous exercise behaviour in a fitness club (YES-NO; if yes, number of days in the last week).
- Regular vigorous exercise out of the school, alone or with friends (YES-NO; if yes, number of days in the last week).
- Being a smoker (YES-NO; if yes, number of cigarettes in the last week: none, 1–5, 5–10, 10–15, 15–20, over 20).

vi) Eating fruits (YES-NO; if yes, number of fruits in the last week: none, 1–5, 5–10, 10–15, 15–20, over 20).

vii) Involvement in violent actions as a fan (YES-NO; if yes, number of times in the last month: none, 1, 2–3, 4–5, 5–10, over 10).

viii) Use of hashish or ecstasy in the past (YES-NO; if yes, number of times in the past: none, 1–5, 5–10, 10–15, 15–20, over 20).

A smoker was defined as a person smoking at least two cigarettes per week. Vigorous exercise was defined as the type of activity that substantially increases people's pulses (over 120 pulses per minute) and lasting for at least one hour. It was explained to pupils that this happens when we participate in activities such as basketball, football, or aerobics. Regular exercise was defined as exercise occurring at least two times per week.

#### ■ Attitudes

Attitudes were assessed in relation to six health-related behaviours: being an athlete, regular (at least two times per week) vigorous exercise, smoking, eating fruit, violent behaviour as a fan and use of hashish or ecstasy. Using the same question format: 'I think that being an athlete/ exercising vigorously and regularly/ smoking/ eating fruits/ participating in violent acts as a fan/ using hashish or ecstasy, during the next months is ...' responses were rated on a 7-point scale for four bipolar adjectives: from good =7 to bad =1, healthy=7 to unhealthy=1, useful=7 to useless=1, and pleasant=7 to unpleasant=1. The reliability (Alpha) for each of these scales was good, ranging between 0.82 to 0.90. Based on these responses six scale scores were computed, adding the scores for each of the four items divided by four. These six scale scores were recoded into dichotomous variables because for most pupils the scores on attitudes towards smoking, involvement in violent acts as a fan, and use of hashish or ecstasy were the minimum possible (i.e. in the range 4–28 they scored 4) and for many pupils the scores on attitudes towards eating fruits, sport involvement and regular exercise were the maximum possible (i.e. in the range 4–28 they scored 28). Hence, the sample was divided to pupils holding firm positive attitudes towards being an athlete/ exercising vigorously and regularly/ smoking/ eating fruits/ participating in violent acts as a fan/ using hashish or ecstasy, and to those who did not.

## RESULTS

### Descriptive statistics

Findings from chi-square tests shown in *table 1* reveal that boys more frequently adopted exercise, violent behaviour and use of hashish and ecstasy than girls. The higher frequency of exercise behaviour among boys stems from the higher percentage of athletes among them rather than exercise in fitness classes or exercising alone or with friends, for which there is no difference

**Table 1** Percentage of boys and girls per age group adopting the following behaviours

	Elementary school Aged 11–12		Junior high school Aged 13–14		Senior high school Aged 16–17	
	Boys	Girls	Boys	Girls	Boys	Girls
Exercise 10 times/month or more	56.6 <sup>b</sup>	30.5	69.3	44.3	58.5	25.3
Being an athlete	46.2	24.4	47.5	23	36.3	17.6
Exercise in fitness class	18.5	22.5	20.5	21.4	17.5	16.8
Exercise alone or with friends	61.2	57.0	67.1	66.9	65.2	61.1
No exercise at all	10.7	17.1	9.3	12	21	30.3
Being a smoker	2.6	0.2	6.6	5.0	23.5	22.2
Eating <5 fruits/week	23.7	26.3	22.1	25.4	23.4	27.2
Involvement in violent acts as a fan	11.7	2.4	17.3	4.5	29.2	5.5
Tried hashish or ecstasy <sup>a</sup>	–	–	3.9	1.6	11.2	4.3

a: At least once in lifetime; elementary school pupils were not asked about use of hashish and ecstasy.

b: Percentage differences larger than 5.0 are statistically significant at  $p<0.01$ .

between the genders. Senior high school pupils exercised less than those in junior high and elementary schools, which was due to drop out from competitive sport. For both genders, smoking, involvement in violent events as a fan and hashish or ecstasy consumption increased with age.

In relation to attitudes (using the definition of firm attitudes), the results (table 2) show that many pupils of both genders had positive attitudes towards health behaviours, particularly in relation to fruit consumption. Similarly, most had firm negative attitudes towards sport violence and hashish or ecstasy consumption, although girls were more negative than boys. Firm negative attitudes towards smoking, hashish or ecstasy use and sport violence declined with age. Likewise, firm positive attitudes towards sport involvement decreased with age. For boys only, firm positive attitudes towards eating fruits declined with age.

*Interrelatedness among health behaviours and attitudes*

Health-related behaviours: To examine the interrelationship between behaviours, six sequential logistic regression analyses were performed, using the following dichotomous dependent variables: exercise 10 times/month or more, exercise at least one

time/month, smoking, eating more than five fruits/week, involvement in violent acts as a fan and tried hashish or ecstasy at least once in lifetime. At the first step of all analyses, gender and age group (recoded into two dummy variables) were entered as control variables. At the second step, the dichotomous behaviour variables were entered (when one of these independent variables was identical with the dependent variable, it was excluded from the analysis). The variable use of hashish or ecstasy was not included as a predictor because there were no data for the youngest age group. The results (table 3) are shown as a series of odds ratios (OR).

After adjusting for gender and age, being an athlete, eating more than five fruits per week and violent behaviour in sport events all increased the odds of regular exercise (10 times/month or more). Correspondingly, eating more than five fruits per week significantly reduced the odds of no exercise at all. Being an athlete reduced the odds of smoking. On the other hand, involvement in violent acts as a fan markedly increased the odds of smoking. Eating more than five fruits per week was positively associated with being an athlete and negatively associated with participation in violent rows in sport events. Involvement in

**Table 2** Percentage of boys and girls per age group adopting the following firm attitudes

	Elementary school Aged 11–12		Junior high school Aged 13–14		Senior high school Aged 16–17	
	Boys	Girls	Boys	Girls	Boys	Girls
	<b>Firm positive attitudes towards</b>					
Exercise	39.8	39.8	37.0	37.9	36.6	37.2
Sport involvement	44.0 <sup>b</sup>	41.3	39.1	38.1	36.8	35.1
Eating fruits	67.4	69.7	60.3	65.7	57.1	66.6
<b>Firm negative attitudes towards</b>						
Smoking	77.7	82.2	76.1	76.1	62.9	62.8
Involvement in violent acts as a fan	62.4	71.0	50.1	54.5	29.9	43.5
Hashish or ecstasy <sup>a</sup>	–	–	81.7	84.1	74.4	82.6

a: At least once in lifetime; elementary school pupils were not asked about use of hashish and ecstasy.

b: Percentage differences larger than 5.0 are statistically significant at p<0.01.

**Table 3** Health-related behaviours in relation to other health-related behaviours and attitudes

Predictors	Exercise ≥10 times/month	No exercise at all	Smoking	Eating >5 fruits/week	Involvement in violent acts as a fan	Tried hashish or ecstasy
	OR <sub>adj</sub> (95% CI)	OR <sub>adj</sub> (95% CI)	OR <sub>adj</sub> (95% CI)	OR <sub>adj</sub> (95% CI)	OR <sub>adj</sub> (95% CI)	OR <sub>adj</sub> (95% CI)
<b>Step 2: Behaviours</b>						
Being an athlete	4.53 (3.94–5.20)	–	0.67 (0.54–0.85)	1.24 (1.07–1.43)	1.63 (1.35–1.97)	1.20 (0.83–1.76)
Being a smoker	0.83 (0.67–1.01)	1.30 (0.99–1.70)	–	0.87 (0.70–1.08)	5.01 (3.97–6.33)	24.4 (16.2–36.7)
Eating >5 fruits/week	2.07 (1.80–2.38)	0.45 (0.39–0.53)	0.87 (0.71–1.09)	–	0.68 (0.56–0.84)	0.88 (0.60–1.29)
Involvement in violent acts as a fan	1.55 (1.26–1.91)	0.85 (0.65–1.13)	5.10 (4.01–6.47)	0.68 (0.56–0.84)	–	3.10 (2.13–4.50)
<b>Step 3: Firm attitudes towards</b>						
Exercise	1.42 (1.25–1.62)	0.70 (0.59–0.84)	1.07 (0.84–1.36)	1.21 (1.05–1.39)	1.26 (1.02–1.56)	1.01 (0.67–1.53)
Not smoking	1.01 (0.86–1.18)	0.92 (0.75–1.12)	0.08 (0.06–0.11)	1.18 (1.00–1.38)	0.84 (0.67–1.05)	1.26 (0.79–2.01)
Eating fruits	1.02 (0.89–1.17)	0.92 (0.77–1.09)	1.32 (0.96–1.66)	1.56 (1.36–1.79)	1.00 (0.82–1.22)	0.99 (0.67–1.47)
Not involving in sport violence	0.94 (0.82–1.08)	1.17 (0.98–1.40)	0.88 (0.68–1.14)	1.21 (1.05–1.40)	0.12 (0.09–1.16)	0.83 (0.48–1.40)
No hashish or ecstasy use	–	–	–	–	–	0.16 (0.10–0.24)

OR<sub>adj</sub> = Odds ratio adjusted for gender and age (at step 1), CI = 95% Confidence Interval for adjusted Odds Ratio.

The symbol – indicates that the particular variable was not entered as independent in this logistic regression analysis.

violent acts as a fan also increased the odds of smoking and eating less than five fruits per week, and most importantly the odds of being an athlete. Finally, smoking and involvement in violent acts as a fan both markedly increased the odds of hashish or ecstasy use.

In the investigation of the relationships between attitudes and behaviours the effects of gender, age and health behaviours were adjusted. This was achieved by entering the dichotomous attitudinal variables at the third step of the above-mentioned logistic regression analyses. The results showed that attitudes were positively related with their corresponding behaviours, associations being particularly strong in the case of health risks. For example, the odds for being a smoker were twelve times higher for youngsters holding firm negative attitudes towards smoking than for those who did not.

Finally, in order to examine the relationships among attitudes independently of behaviours six sequential logistic regressions were conducted (table 4). The dependent variables were firm positive attitudes towards 1) exercise, 2) participation in sport, 3) eating fruits, and firm negative attitudes towards 4) smoking, 5) involvement in violent events as a fan, 6) hashish or ecstasy use. At the first step of each analysis, gender, age, being an athlete, being a smoker, eating more than five fruits per week and participating in violent acts as a fan were entered. At the second step, firm positive attitudes towards exercise and eating fruits, and firm negative attitudes towards smoking and involvement in violent acts as a fan, were added. The results show that, independently of behaviours, attitudes towards exercise, sport involvement and eating fruits are each inter-related, the associations among the health-risk attitudes being stronger. For example, the odds for holding firm negative attitudes towards smoking was almost four times higher for adolescents holding firm negative attitudes towards involvement in sport violence. Finally, firm positive attitudes towards exercise, sport involvement and eating fruits were positively linked with firm negative attitudes towards smoking, sport violence and hashish or ecstasy use.

## DISCUSSION

Most of the evidence from this study shows that the strategy of the European Community to launch the anti-smoking campaign in collaboration with European football players is reasonable. These players act as a model for young people. The present study also showed that, according to pupils' views, being an athlete is inversely related to smoking and other health risks. Thus, sport is a suitable context to promote health-related messages to youth. Taking into consideration that millions of youngsters participate in sport across Europe, this context could be used more effectively for health education. Sport programmes for adolescents designed to reduce health-compromising behaviours and at the same time

promote health-enhancing behaviours<sup>20</sup> should be spread across Europe.

The anti-smoking campaign of the European Community together with football players involvement is not unproblematic, however. The collaboration will further reinforce the status of football heroes and could possibly increase the number of sport fans. Furthermore, as this study shows, being a sport fan is strongly related with participating in violent acts as a fan<sup>2</sup> and correspondingly with many additional health risk behaviours. Notably, the odds for being a smoker were five times higher for participants in violent acts compared with non-participants. Such negative behaviours could be even further reinforced if some sport heroes act as a model of violent behaviour. One example is Manchester's United captain, Roy Keane, who publicly admitted his violent behaviour against Manchester's City's Alf Inge Haaland, during a derby in April 2001. Haaland has hardly played since. Evidently, the European football players should firstly campaign against sport violence and be anti-violence models in their careers if they really wish to promote health behaviours to adolescents.

Overall, the results of this study revealed a pattern of strong association among health risk behaviours supportive of problem behaviour theory.<sup>3</sup> Within this research tradition the present study adds the connection of fans' violence in sport events with other health risk behaviours. Correspondingly, physical activity involvement was positively related to eating fruits, supporting the notion of a positive association pattern among health-promoting behaviours. Contrary to the opinion of some authors,<sup>21</sup> this interrelatedness in adolescents' health-related behaviours was independent of age and gender.

It is, however, important to note that the association between a number of health-promoting behaviours and health-risks was non-existent. An exception to this rule was the negative relationship between smoking and sport involvement and the negative association between eating fruits and violent behaviour in sport events. Most importantly, in line with previous findings,<sup>2</sup> sport involvement was linked with violent behaviour in sport events, clearly indicating that health promotion authorities should not be uncritical about sport involvement. The major goals that are cultivated in everyday sport practice needs questioning. For example, the team culture created by sport officials, coaches, parents and athletes, which determine the goals of young people in sport and life,<sup>22</sup> may not be health promoting. An emphasis on superiority at any cost facilitates aggressive behaviour in sport.<sup>12,13,22</sup> On the other hand, with clear norms and goals, sport is a context in which youngsters can be taught how to set challenging personal goals and pursue personal development in life. An emphasis on personal improvement in sport promotes achievement without undermining moral behaviour and could possibly discourage the adoption of several health-risks.<sup>22</sup>

**Table 4** Relationships among health-related attitudes

Predictors	Firm attitudes towards					
	Exercise OR <sub>adj</sub> (95% CI)	Participation in sport OR <sub>adj</sub> (95% CI)	Not smoking OR <sub>adj</sub> (95% CI)	Eating fruits OR <sub>adj</sub> (95% CI)	Not involving in sport violence OR <sub>adj</sub> (95% CI)	No hashish or ecstasy use OR <sub>adj</sub> (95% CI)
Firm attitudes towards						
Exercise	–	7.78 (6.81–8.90)	1.88 (1.60–2.22)	2.68 (2.34–3.07)	1.65 (1.44–1.88)	1.48 (1.16–1.88)
Not smoking	1.88 (1.60–2.21)	1.56 (1.29–1.87)	–	2.04 (1.75–2.37)	3.94 (3.35–4.63)	6.16 (4.96–7.67)
Eating fruits	2.69 (2.35–3.09)	2.39 (2.05–2.79)	2.05 (1.77–2.39)	–	2.54 (2.22–2.91)	2.22 (1.80–2.74)
Not involving in sport violence	1.65 (1.45–1.89)	1.33 (1.15–1.55)	3.94 (3.35–4.63)	2.57 (2.25–2.94)	–	4.60 (3.48–6.10)

OR<sub>adj</sub> = Odds ratio adjusted for gender, age, being an athlete, being a smoker, eating more than 5 fruits/week and participating in violent acts as a fan, CI = 95% Confidence interval for adjusted odds ratio.

The prevalence of health behaviours found in this study accords with the recent WHO report concerning levels of physical activity, smoking and fruit consumption patterns of Greek adolescents.<sup>23</sup> A notable strength of the present study was its sample size, double that of the Greek sample included in the WHO project. In the current study illicit drug use and violent behaviour in sport events were also examined, neither of which were investigated in the WHO project. Both drug use and sport violence showed a sharp increase with age. Hashish or ecstasy use seems to start with pupils' entrance into junior high school (age 12) and rises steeply during the high school years.

The present study and the WHO study are consistent in finding that exercise exhibits a slight increase from the age of 11–12 to the age of 13–14, followed by a decrease, and that the proportion of males exercising twice per week or more is approximately double than that for females. The present study showed that this gender difference is attributable to females' low levels of involvement in organized sport. Similarly, the decrease in Greek youngsters' exercise patterns at age 16–17 is mostly due to withdrawal from organized sport. Athlete burnout is mainly attributed to the high demands of sport context that increases adolescents' stress,<sup>24</sup> diminishes their enjoyment<sup>25</sup> and prevents them from developing control over their lives.<sup>26</sup> Different options for public policy should be considered in order to increase adolescents' exercise behaviour. For example, a less demanding sport regime could be provided for the majority of young people who do not wish to pursue a professional athletic career. In addition, alternative physical activity patterns could be encouraged, such as participation in fitness and dance classes.

To summarize, although sport involvement has a small positive association with sport violence, and the latter strong links with smoking and drug use, in general attitudes towards sport and exercise are inversely related to attitudes towards health risks. This study showed that attitudes matter, because the relationship between attitudes and behaviour was significant and in the case of health risks very strong. Unfortunately, although sport is a context with positive health connotations and suitable for health education, the present sport structure inhibits many children, particularly girls, and does not promote health behaviours apart from exercise. European authorities should encourage the promotion of sport programmes inclusive for all youngsters and specifically designed to reduce health-compromising behaviours and promote health-enhancing behaviours.<sup>14,20</sup> The rapid increase of health risks among Europe's adolescents<sup>23</sup> demands more concentrated actions in youth contexts.

This study was supported by a grant from the Greek Ministry of Education, Centre of Educational Research.

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Received 2 September 2001, accepted 25 November 2002