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# *Motivation and Affective Outcomes of Physical Education: Implications for Health Education*

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**ABSTRACT** *Enjoyment and mood affection are considered to be main targets of intervention to promote physical activity (PA). Health education based on PA is seeking to explore the factors that affect children to foster and retain healthy habits. This study recognizes that the teaching methodology is crucial and attempts to investigate the effect two different teaching approaches on affective variables, such as, enjoyment, mood and intention. The indirect method ("The Guided Discovery Style") and the direct one ("The Command Style") were implemented. A two way repeated measures ANOVA indicated that there is statistically significant interaction between the enjoyment and the indirect method, while the impact on mood was insignificant but noticeable. Intention to participate in similar lessons after school curriculum found to be independent of the methods. Thus, the direct method seems to have the potential of a powerful tool to promote PA. Implications for health education are also discussed.*

**KEY WORDS:** *Enjoyment, health education, mood, motivation, physical education, teaching methods.*

## **Introduction**

Research provided evidence that peoples' physical activity levels decline year by year (Trost, Pate, Sallis, Freedson, Taylor, Dowda, & Sirard, 2002; Kimm, Glynn, Kriska, Fitzgerald, Aaron, Similo, McMahon, & Barton, 2002). Low levels of physical activity in young people have been also linked to higher rates of obesity, cardiovascular diseases, and poor mental health (Rees, Kavanagh, Harden, Shepherd, Brunton, Oliver, & Oakley, 2006). Studies have also shown that a young person has either many healthy or many unhealthy habits. In other words one habit affects another (Theodorakis & Chasandra, 2006). Thus, any attempt to promote one healthy habit, for example physical activity, this may affect children to develop other healthy habits as well. This perspective seems to imply that school curriculum should be enriched with more and better health education lessons.

In practice, educators, quite frequently, face the problem of non-participation in and dropouts from physical education. Research indicates that negative past experiences in physical education (PE) appear to be one of the main reasons that make people drop out of physical activity (Mason, 1995). Negative memories of school PE include feelings of boredom and incompetence, lack of choice, and negative evaluation from peers (Biddle & Murtie, 2001), conflicts of interest, lack of playing time and fun, limited improvement in skills, or no success, boredom, and injury (Gould, 1987). Obviously, experiences in physical education seem to be influencing enjoyment and mood, which are the two main motivators for continuing physical activity (Biddle & Murtie, 2001). It is also assumed that teaching

approaches affect students' enjoyment and mood (Papaioannou, Marsh, & Theodorakis, 2004). Thus, it would be interesting to examine how teaching methods influence enjoyment and mood in physical education.

Physical education is considered to be the most important means for promoting physical activity to students, as it is part of the school curriculum and it is mandatory for all. Thus, an opportunity is provided for the school system to promote healthy habits through lifelong physical activity (Health Education Authority, 1997). Active children develop skills, habits, and an enjoyment of physical activity that increase their likelihood of remaining active as adults (Health Education Authority, 1997; Dishman, 1990; Sallis, 1995; Vlachopoulos, Karageorgis, & Terry, 2000). It is also important to single out that the interventions that should be made in health education have to focus more on *intrinsic* rather than *extrinsic* motivation (Deci & Ryan, 1985; Ryan & Deci, 2000). Intrinsic motivation refers to highly autonomous behaviours engaged in the feelings of fun, pleasure, and satisfaction that stem from participation in an activity (Deci & Ryan, 1985; Ryan & Deci, 2000). It is believed that when people are intrinsically motivated to exercise, they may become physically active for long(-er) life periods.

Intrinsic motivation is integrally associated with *interest*, which plays an important directive role in how people naturally approach physical activity and it is also linked with *emotions*, such as, *enjoyment* and *excitement*. The latter when accompany the experiences of competence and autonomy could act as the rewards for intrinsically motivated behaviour (Deci & Ryan, 1985). A number of valid and large scale studies provided evidence indicating that a general motivation factor of participating in physical activities is enjoyment (Mason, 1995; Canada Fitness Survey, 1983a; Buonamano, Cei, & Missino, 1995).

Several studies have also demonstrated that physical activity *intentions* are formed more on the basis of autonomous than controlling motives (Chatzisarantis *et al.* 1997; Escarti & Gutierrez, 2001; Hagger, Chatzisarantis, & Biddle, 2002). As shown by Escarti and Gutierrez (2001) interest-enjoyment and effort-importance have an indirect effect, whereas perceived competence has a direct effect on physical activity intention.

It has been estimated that at least 50% of those who initiate exercise regimes will cease continuation within the first six months of starting (Boyd *et al.*, 2002). But, an increase in interest and enjoyment for a given activity could set an end to this trend. Promotion of health education, even in other areas, such as eating habits, could also help to prevent similar trends (Theodorakis & Chasandra, 2006). When people are intrinsically motivated, they experience interest and enjoyment, they feel competent and self-determining, and they perceive the locus of causality for their behaviour to be internal (Deci & Ryan, 1985, p.34). Moreover, intrinsic motivation has been associated with greater creativity (Amabile, 1983), flexibility (McGraw & McCullers, 1979), and spontaneity (Koestner *et al.*, 1984).

Rowland (1990) stated that exercise programs for children have little hope for success unless they are enjoyable. Physical education teachers should find teaching methods that make the lessons of physical education enjoyable for everyone, and not only for gifted children. Lessons need to be designed to create "successes" that are not based on competing with other children. They must be oriented to individual progress and health, which constitute strong motivational factors.

### **Rationale**

Studies on intrinsic motivation (Health Education Authority, 1999) pointed out that interventions for effective physical activity and health education are likely to be more appealing to young people, when they are involved in decision-making and planning of programmes. This reflects that indirect methods, which encourage children to be involved in decision-making, are more enjoyable.

This idea guided the main research hypotheses of the present study. The indirect teaching methods target mainly intrinsic motivators, such as personal improvement, and thus they will be more enjoyable than direct styles that are oriented towards performance and external rewards, or external motivators in general. There is also evidence clearly indicating that the competitive styles of sports, which can be found more in direct teaching styles, can cause stress, although this does not appear to have a chronic mental health affect (Dishman, 1990).

Research reviews (Berger, 1996; Berger & McInman, 1993; Wankel & Berger, 1990) concluded that mood effects can be positive after exercise, but causal links cannot be supported. Three studies from Britain (Sports Council & Health Education Authority, 1992; Thirlaway & Benton, 1996; Steptoe & Butler, 1996) indicated clear positive relationship between PA and psychological well-being, especially positive changes in mood.

Up to today, there is no conclusive evidence identifying a single explanation or clusters of explanations that consistently mediate or moderate the association between exercise and mood changes (Buckworth & Dishman, 2002, p.106). There is not also any evidence for the effect of different methods of teaching on affective outcomes and especially on mood.

Thus, the present study was designed and carried out in order to further investigate any possible connection among variables influencing intrinsic motivation, such as enjoyment and mood, and different teaching methods. The working hypothesis was that two different teaching approaches in PE have a different effect on enjoyment, mood, and intentions of young people. The following four hypotheses were stated.

1. Two completely different teaching methods (the direct – command style and the indirect – guided discovery style) have a different effect on the enjoyment of the lesson.
2. The enjoyment of the lesson is different from the general enjoyment of physical education.
3. The two teaching methods have a different effect on mood.
4. The intention of the children to participate in a similar kind of lessons after school curriculum depends on the teaching method.

### **Method**

#### *Participants*

The sample consisted of 74 participants, 37 boys and 37 girls. Two schools, from the same municipality participated in this study. The participants were 40 from the one school and 34 from another one. Their ages ranged from 11 to 13,

that is, 38 participants were 11-12 years old and 36 participants were 12-13 years old. The sample was divided in two groups by crossing the grades and the schools of the students. In addition, the two groups were equivalent in terms of the pre-intervention measures of enjoyment, mood, and the intention to participate in these classes, as it will be later clarified. In the fifth grade of the first school and the sixth grade of the second school, the lesson was conducted with the direct teaching method ( $n = 36$ ). In the sixth grade of the first school and the fifth grade of the second school, the lesson was taught with the indirect method ( $n = 37$ ).

### *Measurements*

**Enjoyment:** Pupils' enjoyment was measured using a self-reported questionnaire, the "Intrinsic Motivation Inventory" (IMI). This inventory was initially constructed to be employed in a variety of settings, and its use in sport and exercise settings became progressively more popular (McAuley, Duncan, & Tammen, 1989). It consists of 45 items and it can be divided in seven subsections (Ryan, 2001). Each item is rated on the Likert scale of 1 (strongly disagree) – 7 (strongly agree). An advantage of this scale is that it can be modified to fit specific requirements of testing in different situations, as the test has been especially written to be easily adapted to a variety of settings (Cuddihy, Corbin, & Dale, 2002, in Ryan, 2001). Only the interest/ enjoyment subscale was used in this study, and each item was rated on a scale of 1 (strongly disagree) – 5 (strongly agree). This rate was thought to be clearer to the age group of the students. The questions that were used were taken from the modified IMI for Greek population by Digelidis and Papaioannou (1999). Information relating to the validity and reliability of the questionnaire can be found elsewhere (Cuddihy et al., 2002; Ryan, 2001; Boyd et al. 2002).

**Mood:** The pupils' mood and the changes of mood were measured using the Self-Assessment Manikin (SAM) created by Lang (1980, in Bradley and Lang, 1994). The Self-Assessment Manikin (SAM) is a non-verbal pictorial assessment technique that directly measures the pleasure, arousal, and dominance associated with a person's affective reaction to a wide variety of stimuli. The results of a study by Mehrabian and Russell (1997) demonstrated that all emotions can be accurately described in terms of three independent and bipolar dimensions: pleasure – displeasure, degree of arousal, and dominance – submissiveness. According to Mehrabian and Russell (1997), these elements are autonomous, as differing values along any of these three dimensions can occur concurrently without affecting one another. The expression of emotion takes the form of facial expressions that are species-specific repertoire of muscle movement. The facial expression of emotion is not learned, but inherited, and serves along with body language to communicate our emotions to others, and to indicate how we are likely to behave (Buckworth & Dishman, 2002).

SAM depicts each of the three pre-referred dimensions with a graphic character arrayed along a continuous nine-point scale. For pleasure, SAM ranges from a smiling, happy figure to a frowning, unhappy figure; for arousal, SAM ranges from a sleepy with eyes closed figure to an excited with eyes open one. The dominance scale shows SAM ranging from a very small figure represented a feeling of being controlled or submissive to a very large figure representing in-control or a powerful feeling.

It is clear that visually oriented scales using a graphic character eliminate the majority of problems associated with verbal measures or non-verbal measures that are based on human photographs (Morris, 1995). Additionally, Morris (1995) observed that subjects can complete ratings on SAM scales in less than 15 seconds, allowing numerous stimuli to be tested in a short amount of time and causing less respondent wear out than the verbal measures. That was very useful to the present study, because less teaching time was lost for completing the questionnaires during the lesson. Moreover, subjects in a number of studies expressed greater interest in SAM ratings than in verbal self-reports and stated the SAM is more likely to hold their attention (Lang, 1985). Another advantage of SAM is that both children and adults can readily understand the SAM figures and the emotional dimensions they represent (Lang, 1985). SAM is also a culture-free, language-free measurement, and it is suitable for use in different countries and cultures (Bradley, Lang, 1994; Morris, & Bradley, 1994). The cross-cultural consistency of specific facial expressions and corresponding emotions has been supported by Ekman and his colleagues (1971), too. SAM is also an inexpensive and easy method for quickly assessing reports of affective responses in many contexts (Bradley & Lang, 1994).

**Intention:** Pupils' intention to participate in similar lessons after the end of school (after curriculum hours) was measured using the Physical Intention Scale. This questionnaire consists of three similar questions: "I intent to participate in such a kind of lessons after school," "I plan to participate in such a kind of lessons after school," and "I want to participate in such a kind of lessons after school." Each statement was rated in a scale of 1 (very likely) – 5 (very unlikely). The questionnaire was translated into Greek by a bilingual expert. The reliability analysis was statistically significant with alpha 0.93. This scale has been also used by Hagger *et al.* (2001) with small differences in the questions ("I intend to do physical activities at least three or more times during my free time in next week"). They found statistically significant correlations ( $p < 0.01$ ) among the three statements.

#### *Procedure*

The questionnaires of the general enjoyment of physical education (IMI) were given to pupils one week before the intervention. It was explained to them that they were volunteers. In case, they did not want to participate, they could just not tick the relevant box, or drop out the day of the lesson. There were no dropouts. Furthermore, it was emphasised that there were not wrong or right answers. Students were instructed to answer exactly as they were feeling. Although they were asked to put their names on the questionnaires, they were assured that their answers would remain confidential, and that any information would be used only for the study.

The lessons were held by the regular teacher of the classes. A meeting with the teacher was held a day before each lesson in order to analyse and give him/her guidelines for each method. The researcher (the author) was present during intervention, but she did not participate in the procedure.

On the intervention day, just before the lesson, the pupils filled in the first mood questionnaire (SAM) expressing the mood that they had that particular time (exactly before the lesson started). During the lesson, they filled in the second

mood questionnaire, when their teacher told them. It took approximately 30 seconds to fill in the questionnaires. Explanations and the purpose of each questionnaire were given to them before they filled in any questionnaire. It was also emphasised that the questionnaires were designed for the particular lesson that they had just participated. Thus, their answers should be strictly limited to that lesson. It was emphasised again that there were not any right or wrong answers, and that they should express their own feelings. Again, they were assured that their answers would remain confidential and they would be used only for the study. They were free to ask for more explanations if they wanted to. During the lesson there was a blind observation that occurred in order to ensure that the two methods were different.

*The Lessons:* The subject of the lessons was gymnastics, and more specifically, it dealt with different ways of balancing and how the best balance position is obtained, and different jumps focused on the ways of landing. In the direct method (the command style), the teacher showed the exercises (balances or jumps) and focused on the key points of each exercise. Children repeated what the teacher had done. Feedback was given to them, especially for the key points. In the indirect method (the guided discovery style), the teacher asked questions and children tried to find kinetics answers. The key points of each exercise were found through a number of questions of the characteristics of these methods were based on the guidelines proposed by Mosston and Ashworth (1994). In both methods, games with music were played. In the direct method, the children did not have a choice of movement as they had in the indirect method. In the direct method, children were told exactly what to do when music stopped, but in the indirect method, they could choose the movement they would take.

### **Results**

Two-way repeated-measures ANOVA with teaching method as the independent variable and enjoyment or mood as the dependent (repeated-measures) variable was performed. The results from the above ANOVAs were coupled with results of an MANCOVA with the teaching method as the independent variable and enjoyment and mood after intervention were the dependent variables, while enjoyment and mood before intervention were the covariates. In addition, independent t-tests were employed for the intention scale and the comparison of the enjoyment between the two methods. An independent t-test for the pupils' answers and a comparison of the means of the observer's answers was also held.

#### *General*

Descriptive statistics are shown in Table 1. A single total score for each questionnaire was obtained by averaging the score of all items. Cronbach's alpha, for the general enjoyment questionnaire and for all six items was 0.59, while for the specific-lesson enjoyment questionnaire was 0.65. By excluding the last two questions, which were considered to be not so relevant with enjoyment (concentration and worry about mistakes), the new alpha coefficient was 0.71 and 0.86, respectively. Thus, for enjoyment the mean of four questions was included in the statistical analysis.

Table 1  
Means and Standard Deviations

Variables	Direct method (n = 36)		Indirect method (n = 38)	
	Mean	SD	Mean	SD
General Enjoyment	4.10	0.46	4.18	0.52
Specific Enjoyment	4.19	0.61	4.40	0.47
Mood pre	1.87	1.21	1.51	0.89
Mood during	1.37	0.75	1.60	1.12
Mood after	2.49	2.13	1.73	1.32
Intention	2.56	1.24	2.37	1.45

There was a significant correlation between the two variables of the mood: pleasure/displeasure and the degree of arousal. Thus, these two were combined into one variable -mood in all three measures (the mean of the two questions). The scale was from 1 (very good mood) – 9 (very bad mood). The correlation between pleasure and arousal was found to be  $r = 0.52$  ( $p = 0.001$ ).

Analysis for the effect of gender showed that there was no interaction between change of general enjoyment - specific lesson and gender in both methods ( $F = 0.56$ ,  $p = 0.45$ ). There was also no interaction between changes in mood and gender for both methods ( $F = 0.41$ ,  $p = 0.61$ ).

*Enjoyment*

The repeated measure ANOVA showed that there was a statistically significant interaction ( $F = 4.34$ ,  $p = 0.04$ ) between the time (general – specific enjoyment) and the methods. According to Figure 1, the indirect method resulted to higher levels of enjoyment, than the direct method. Children enjoy more the lesson with the indirect method (mean = 4.71,  $SD = 0.48$ ) than the lesson with the direct method (mean = 4.34,  $SD = 0.84$ ), and this difference was statistically significant ( $t_{72} = 2.33$ ,  $p = 0.02$ ).

Note that the general enjoyment of PE was the same for both groups. The mean of the direct group in the general enjoyment  $4.43 \pm 0.47$ , while the corresponding mean of the indirect group  $4.44 \pm 0.72$ . The difference was not statistically significant ( $t_{72} = -0.02$ ,  $p = 0.98$ ).

**Figure 1.** The Profile Plot from the Repeated-measures ANOVA for Enjoyment. [Time 1 (pre intervention) is the general enjoyment and time 2 (post intervention) is the enjoyment for the specific lesson.]



*Mood*

Repeated measures ANOVA showed that there was a statistically significant effect on the children's mood ( $F = 7.98$ ,  $p = 0.002$ ). Moreover there was a statistically significant interaction between time and methods ( $F = 4.62$ ,  $p = 0.02$ ). The mood before the lesson was general good. The mean of the mood in direct group before the lesson was  $1.87 \pm 1.21$ , and the mean of the mood in indirect group before the lesson was  $1.51 \pm 0.89$ . This difference was not statistically significant ( $t_{72} = 1.46$ ,  $p = 0.15$ ). During the lesson, the mood of the direct group improved (mean = 1.37,  $SD = 0.75$ ), while the mood of the indirect group remained almost unchanged (mean = 1.59,  $SD = 1.12$ ). The difference between the groups at this time was not statistically significant ( $t_{72} = 0.97$ ,  $p = 0.33$ ). After the lesson, the mood of the direct group was the worst (mean = 2.48,  $SD = 2.13$ ), while the mood of the indirect group was little worse than at the beginning, but it was better than the mood of the direct group (mean = 1.73,  $SD = 1.32$ ), but the difference between the groups was not statistically significant ( $t_{72} = 1.82$ ,  $p = 0.07$ ).

*Figure 2. The Profile Plot from the Repeated Measures ANOVA for Mood. (Time 1 is before the lesson, time 2 is during the lesson and time 3 is after the lesson).*

**A Multivariate Analysis of Covariance (MANCOVA)**

In order to reinforce the results from the above analyses of variance, a multivariate analysis of covariance is carried out. In this MANCOVA the teaching method was the independent variable and enjoyment and mood after intervention were the dependent variables, while enjoyment and mood before intervention were the covariates. The Bartlett's test of Sphericity had value of 0.000, that is, the null hypothesis that the residual covariance matrix is an identity matrix was rejected and thus the accuracy of the test increases. However, the Box's test of equality of covariance matrices was not satisfied and the homogeneity assumption (of MANOVA) has been violated. Thus, the results should be treated with caution.

The analysis showed that there was a statistically significant effect of the teaching method ( $F=5.89$ ,  $p = 0.018$  statistical power=0.67). The indirect method proved

more effective than the direct method. On the contrary, statistically significant effect was not observed on mood ( $F=0.429$ ,  $p=.52$  statistical power=0.098).

The covariates had statistically significant effects on dependent variables. Pre intervention enjoyment had a statistically significant effect on enjoyment after intervention ( $F=7.16$ ,  $p=.0009$  statistical power=0.75) and pre intervention mood had statistically significant effect on mood after intervention ( $F=35.8$ ,  $p=.0000$ , statistical power=0.99). The above results are in accordance with the conclusion drawn by implementing the preceding statistical analyses. The teaching method had a noticeable but non-statistically significant effect.

### **Intention**

In order to find whether the two groups had the same intention to participate in a similar lesson of PE after school curriculum, an independent t-test was used. The mean was  $2.56 \pm 1.24$  for the direct group compared to  $2.36 \pm 1.46$  for the indirect group. This difference was not statistically significant ( $t_{72} = 0.62$ ,  $p = 0.54$ ). Therefore the intention to participate in a similar lesson was the same for both groups.

### **Correlation between Enjoyment and Mood**

The correlation between enjoyment of the specific lesson and mood was tested. There was a small but statistically significant negative correlation between enjoyment and mood after the lesson ( $r = -0.26$ ,  $p = 0.027$ ). The negative sign is due to the inverse scales employed for the two variables, that is, for enjoyment the larger the number the more the enjoyment, while for the mood the larger the number the worse the mood. Thus, the more enjoyable the lesson was, the better the mood after the lesson was.

### **Conclusions and Implications**

The cumulative evidence of the study indicates that the two completely different teaching methods, the direct – command style and the indirect – guided discovery style- had a different effect on the enjoyment of the lesson, but had not different effects on mood. The enjoyment of the lesson was different from the general enjoyment of physical education, and children's intention to participate in a similar kind of lessons after school curriculum was not different between the two teaching methods. The results of the study showed that children generally enjoy PE. Both groups answered that they enjoyed it between 'much' and 'very much'. This is in agreement with other studies (Dyson, 1995), and is an interesting point for the PE teachers, since the children were pre-teenagers, the age where usually a decline of participation in sports and in PE is observed (Van Wersch, Trew, & Turner, 1992). The fact that there was no big difference of general enjoyment between the two groups could be explained by the fact that the two groups had the same teacher. Research evidence that instructors' support and enthusiasm are one of the most important reasons for enjoyment (Patton, 1992).

There was however a significant difference in enjoyment for the specific lessons between the two groups. This is in agreement with the results of Morgan et al. (2005). The lesson taught with the guided discovery style was more enjoyable than

the lesson with the command style. In the indirect method that was used in this study, children always had to solve a kinetic problem. This made the lesson more interesting and challenging in comparison to the lesson of the direct method, where children had only to repeat the moves that teacher presented to them. In the indirect method, children were always in challenge, but not in a high challenge which might brought anxiety, whereas, in the direct method, they were in a little challenge which might resulted in boredom (Csikszentmihalyi, 1975). It should be also mentioned that the children who were taught with guided discovery style indirectly understood that in their lives they should choose and not just repeat what others do. They developed free will that is considered one of the targets that health education tries to achieve.

Several studies indicated that although the direct method has a greater effect on the discipline and the safety of pupils, it usually limits initiative, creativity, and the cognitive participation of pupils (Vannier & Gallahue, 1978, in Emmanouil, 2001). The fact that the indirect method increases the opportunity of developing these variables may have an effect on lesson's enjoyment (Light, 2003; Theodorakou, 2000). Moreover, the indirect method limits the chances of comparisons and humiliations (Emmanouil, 2001) among the children. Children move and participate according to their own abilities. Hence, there is always a sense of success and a task-oriented climate that is more enjoyable than an ego-oriented climate that is usually developed in the direct method (Treasure & Roberts, 2001; Ntoumanis & Biddle, 1999b; Digelidis & Papaioannou, 2002). In the indirect method, the children were involved in decision-making and they had choices, which seemed to be enjoyable to them (Health Education Authority, 1999; Williams & Bedward, 1999).

Additionally, in the indirect method there was a story-play that children seem to enjoy, as they continually asked to play it more and more. This area should be explored more in the future. Our findings imply that this kind of plays could be adapted for older children and could be an effective intervention to motivate children for more easily participating in physical activity. This means that it can help them to become more active and more interested in for health education.

Although there was a significant difference in enjoyment between the two methods, both groups appeared to enjoy the specific lessons a lot. This might be partly explained by the fact that, in both methods, there were games with music, something that had not been done before in these classes (according to their teacher), and that could enhance enjoyment. There are studies indicating that physical activity with music is more enjoyable (Ha & Wong, 2002; Gray, 1988). This area should be explored more as PE lessons with music could be an effective intervention for promoting physical activity and health education.

The results also showed that there was not any interaction among enjoyment, method, and age. The age difference was small, and not so much difference in enjoyment was expected. It is noticeable that both ages showed more preference to the indirect method. Nevertheless, there must be more research in this field as there is evidence indicating that younger children prefer more the direct method (Mosston & Ashworth, 1994).

The direct group had a rather good mood at the beginning of the lesson, during the lesson their mood became better, but at the end it deteriorated. This could

be attributed to a little excitement at the beginning, due to the fact that they participated in a research activity reinforced by the presence of new people in their school (the observer and the examiner) (Dyson, 1995). Temporary improvement of mood during the lesson could be attributed to the fact that the questionnaire was answered just after a game with more movement and aerobic exercise, which is known to enhance mood (Rudolf & Kim, 1996). The worsened mood at the end might express or reflect that pupils disliked that the lesson ended.

In the indirect group, the mood was very good at the beginning and remained unchanged during the lesson. The positive slope of the line showed in Figure 2 does not imply any statistical change. Conclusively, the indirect method did not affect the mood of the children.

Comparing the effect of two approaches, it appears that at the end the indirect method resulted to better mood. Even though the difference is not statistically significant, it is noticeable, since research has shown that mood is likely to be enhanced in mindful activities, such as those in indirect method of teaching (Netz & Lidor, 2003).

Enjoyment and mood after the lesson were correlated significantly ( $r = -0.26$ ,  $p = 0.027$ ). Such correlation has been reported for activities such as rock-climbing and health education class, where enjoyment appeared to mediate the acute mood changes (Molt, Berger, & Leuschen, 2000; Berger, 1996; Berger & Owen, 1988). Berger and Molt (2000) mentioned that an enjoyable bout of exercise would be associated with greater mood benefits than exercise that was perceived as less enjoyable or even unpleasant. They also noticed that personal enjoyment seems to be an important criterion for encouraging the short-term improvements in mood associated with exercise. These findings are important for physical educators, because it is assumed that the more enjoyable a lesson is, the better mood students have, and this affect their mental health, which is an important issue for physical and health education.

Generally in the literature there are many studies that have examined the relationship between exercise – mood, but the results are equivocal. There is no conclusive evidence that identifies a single mechanism or group of mechanisms as consistently influencing the exercise-mood relationship (Berger & Molt, 2000).

The results did not support the research hypothesis concerning the intention. There was not significant difference between the two groups. However, there was as a small trend for more participation in the direct group. According to the theory of intrinsic motivation and the self-determination theory (Deci & Ryan, 1985), it was anticipated that the indirect method, which targets more intrinsic motivators would have affected pupils' mood significantly. The failure to confirm this theory-driven hypothesis, which was reported in the literature (Omar & McAuley, 1993; Bungum, et al. 2000; McDonough, 2002, Vlachopoulos, Karageorgis, & Terry, 2000), could be attributed to reasons associated with the procedure, such as sample size, fatigue, or inattention. However, it is essential to recall that the reasons of intent or not to participate in a particular activity are not only internal, but also external motivators (McDonough, 2002). Nevertheless the fact that both groups showed considerable intention to participate in similar lessons after school curriculum is interesting and encouraging.

### **Implications for Health Education**

The necessity for health education is evident from several studies strongly suggesting that cardiovascular diseases and obesity appeared to be the first reason of death worldwide and from the fact that childhood obesity has a tendency to become a disease (Benedicte, Bourdeaudhuij, Tangle, Hills, De Bode, 2004). Given that children are not well informed how to protect their health, Health Education is what is needed to help them to know better about health issues. Health education could be defined as the procedure of providing experiences that affect knowledge and attitudes about health (Theodorakis & Chasandra, 2006). According to an alternative definition of the World Health Organization (WHO) "Health Education" is a process comprising of consciously constructed opportunities for learning and communication designed to improve health information, health literacy, health knowledge, and developing life skills, which are conducive to the promotion of an individual's and community's health including that of the environment (World Health Organization, 2007). The purpose of health education is the protection, the improvement, and the promotion of students' mental and physical health, and their social well-being through the development of social skillfulness and critical thinking. The topic areas included in health education are the following: 1) Interpersonal Relationships – Mental Health; 2) Prevention of the use of addicted substances; 3) Nutrition and Health; 4) Sexual Education; 5) Physical Activity and Health; 6) Circulatory Education; 7) Environment and Health; 8) Voluntarism; 9) Confrontation of emergency situations.

Obviously health education is multidisciplinary, and, according to the literature, it should be taught by indirect methods (Katsikas, Therianos, & Nikolaidou, 2006). Students should become able to connect the subjects of the health education and not just learn rules, ideas and information, or evidence from studies. Otherwise, health education will lose its purpose or part of it, which is a life-long physical activity and health (Theodorakis & Chasandra, 2006). A health educator should be an adviser and a mentor for his/her students and not only a provider of information. The lessons should be taught within a friendly and cooperative environment with indirect methods (Katsikas, Therianos and Nikolaidou, 2006).

The findings of the present study support that indirect methods of teaching can lead to better affective outcomes than the direct ones. As it has already been discussed, affective outcomes, such as enjoyment, are powerful intrinsic motivators and additionally more long-term influential factors than any extrinsic motivator.

Physical activity is a health habit that should be adopted by every person, and one of the main purposes of physical education is to promote a life-long physical activity and develop life skills that help people to remain healthy and active. Our findings suggest that if physical education is taught by indirect teaching style, it has better effects on enjoyment and mood. These two variables are important for the continuation of exercise, which constitutes one of the targets of health education as well. Indirect teaching styles promote the feeling that everyone is different, and has choices to do or not to do something and in various ways. This is an important aspect of health education. Children realize that have choices and the free will to decision making. This makes them responsible and helps them when facing dilemmas on vital health issues, such as, drugs, cigarettes, fatty foods etc. Moreover, indirect teaching styles promote critical thinking, imagination and freedom than by

being taught with direct teaching styles.

Finally, it is worthwhile to mention that teachers in Greek education come from a teacher-centered education, and they are not usually familiar with indirect and student-centered teaching styles (Katsikas, Therianos & Nikolaidou, 2006). Thus, the methodology does not merely concern the competent, but it is an open issue for teacher education and in service-training programs as well.

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