

The Effects of a Cooperative Physical Education Program on Students' Social Skills

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***This is a preliminary version of the paper: The Effects of a Cooperative Physical Education Program on Students' Social Skills. Marios Goudas & Evmorfia Magotsiou. Journal of Applied Sport Psychology, 21, 356-364. The final version of the paper can be found at the Journal's website:
<http://www.tandf.co.uk/journals/titles/10413200.asp>***

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Abstract

The present study examined the effect of a cooperative physical education program on students' social skills and attitudes toward group work. Four sixth grade classes were assigned either in an experimental ($n = 57$) or in a control group ($n = 57$). The experimental classes received a cooperative learning program. Students completed self- and peer forms of the Multisource Assessment of Children's Social Competence (Junttila, Voeten, Kaukiainen & Vauras, 2006) and the Feelings Toward Group Work scales (Cantwell & Andrews, 2002) before and after the program. Results showed gains of the experimental classes on social skills and on preference for group work.

The Effects of a Cooperative Physical Education Program on Students' Social Skills

Do students who participate in cooperative learning programs become more “cooperative”? That is, do students who take part in cooperative learning groups possess or acquire the social skills and attitudes necessary for effective interaction within the group? The current study examined whether a cooperative learning physical education program would enhance students' social skills as well as their attitudes toward group work. In accordance with Merrell and Gimpel (1998), social skills “...are learned, composed of specific behaviors, include initiations and responses, maximize social reinforcement, are interactive and situation-specific and can be specified as targets for intervention” (p. 5).

There is strong research evidence regarding the positive effects of cooperative learning on academic achievement, self – esteem, active learning and social skills development (Johnson & Johnson, 1994; Slavin, 1995). More limited research in physical education has shown positive effects of cooperative learning on students' achievement (Barrett, 2005; Johnson & Ward, 2001) and on teachers' and students' beliefs regarding students' communication (Dyson, 2001, 2002).

As some students may not possess the required social skills for successfully working within a group, some studies have demonstrated that social skills training, enhances the positive effects of cooperative learning (Gillies & Ashman, 1996, Prichard, Stratford, & Bizo, 2006). Today, there is an emphasis on teaching social skills as these constitute important elements of students' social development. Further, social competence is frequently recognized as a curricular goal in several programs and subjects such as in physical education. Physical education is particularly suitable for teaching social skills due to the frequent and varied interactions that take place between

the students (Grineski, 1996; Tjeerdsma, 1999). However, as several authors have warned, (Bowen, 1998; Gillies & Ashman, 1996 simply having students interacting within groups is not sufficient for the development of cooperation). Instead, what is important is a careful shaping of the teaching environment towards this aim. In the present study, a physical education cooperative program aiming toward enhancing students' social skills was developed, applied, and evaluated. The program was developed in line with the major approaches of cooperative learning.

Four major approaches to cooperative learning have been established in the literature: conceptual, structural, curricular, and complex instruction. The conceptual approach (Johnson & Johnson, 1994) emphasizes five learning elements for the structure of activities: individual accountability, face-to-face interaction, interpersonal and small group skills, and group processing. The structural approach (Kagan, 1990) emphasizes positive interdependence and relies on structures such as the Jig-Saw and Learning Teams. The curricular approach is subject-specific (Slavin, 1995) and emphasizes team rewards and individual accountability. Finally, the complex instruction approach (Cohen, 1994) focuses on group work for problem-solving tasks, usually open-ended.

Research on cooperative learning in physical education has mainly focused on student achievement, implementation issues and social skills. Regarding achievement, Johnson and Ward (2001) demonstrated that the introduction of a class-wide peer tutoring method in a striking course resulted in an increase of correct trials relative to a baseline trial. Similarly, Barrett (2005) reported that the implementation of a cooperative learning strategy in a handball unit increased the percentage of correct trials.

Regarding social skills, Polvi and Telama (2000) used reciprocal teaching as a cooperative learning method. Their results showed improvements in self-reported helping tendency and caring about others. In an earlier study, Orlick (1981) showed that a cooperative games program increased children's sharing tendency. Dyson (2001) in a qualitative evaluation of a cooperative learning program in physical education, reported that teachers and students felt that the program enhanced students' interaction, improved students' sense of responsibility, and facilitated students' caring about teammates. In a subsequent study, Dyson (2002) reported that students and teachers thought that a cooperative learning program in physical education improved students' communication skills. Although these studies provide evidence regarding the effects of physical education cooperative learning programs on students' social skills, this evidence needs to be strengthened by field testing of programs aiming toward the development of specific social skills and by evaluating social skills using multiple assessment methods.

This study adds to the current literature by examining the effect of a cooperative learning program on students' social skills and their attitudes toward group work. In the present study, specific social skills were selected and specified as learning objectives and the cooperative learning sessions were designed to meet these objectives.

Furthermore, apart from examining social skills by self-reports, peer reports which can be considered as a more objective measure were utilized. Moreover, students' preference toward group or individual work was also assessed as a possible parallel outcome of students' enhanced social skills. It was hypothesized that the cooperative learning program, compared to a traditional physical education program, would enhance specific social skills of students, assessed both by self-reports and by peer-reports, as well as students' preference for group work.

Method

Design, participants and procedure

Students from two sixth-grade classes from two schools were assigned to an experimental group ($n = 57$, 29 boys and 28 girls), whereas students from two different sixth-grade classes from the same schools formed the control group ($n = 57$, 30 boys and 27 girls). The experimental group was taught a 13-unit cooperative learning program described below, while the control group was instructed in the same subject matter with the experimental group but with a command teaching style (Mosston & Ashworth, 2002). The defining feature of this style is that all decisions are being made by the teacher. Thus, for the control group, the teacher explained the objectives of each lesson, demonstrated the skills to be practiced, provided starting and stopping cues, and led the class during practice. There were three sessions per week, each one lasting 45 minutes. Two physical education teachers were trained by the authors in cooperative learning methods and taught in one of the experimental and one of the control-group classes each. The questionnaires for assessing the dependent variables were completed one week before and one week after the implementation of the cooperative program. The questionnaires were completed by the students in the classroom in the presence of the authors but in the absence of the physical education teachers. Students were assured about the confidentiality of their responses. Permission to conduct the study was obtained from the school principals and parental consent forms were secured for all participating students.

Cooperative Program

Brooks' (1984) taxonomy of life skills was used to select specific social skills as learning objectives. Brooks (1984) has identified four broad categories of life skills

including interpersonal communication/human relations skills and has provided life skills descriptors for these categories separately for childhood, adolescence and adulthood. The list of interpersonal communication/human relations skills for childhood and adolescence was presented to 12 physical education teachers who held a masters degree in physical education. They were asked to rank these competencies in order of importance as well as whether they could be achieved in physical education. Based on these rankings, five skills were selected and served as learning objectives for devising the lesson plans. These were: interacting with peers, solving problems cooperatively, helping peers and receiving help for goal accomplishment, meeting personal goals through cooperative play and following or leading a group depending on the circumstances. Two lesson plans were developed for each of the four first objectives and four lesson plans for the last one. An additional introductory lesson plan was also developed. The program involved basketball, volleyball, and traditional Greek dancing sessions. Each session was based on one of the four cooperative learning approaches: conceptual (Johnson & Johnson, 1989), complex instruction (Cohen, 1994), structural (Kagan, 1990) and curricular (Slavin, 1996). Regarding the curricular approach, the last four sessions were structured based on the sport education model (Siedentop, 1994), a physical education model that has many common elements with the curricular approach as noted by Dyson, Griffin, and Hastie (2004). An overview of the program is presented in Table 1.

Measures

Children's Social Competence. The Greek version (Magotsiou, Goudas and Hasandra, 2006) of the Multisource Assessment of Children's Social Competence (MASCS, Junttila, et al., 2006) was used. The original instrument consists of 4

subscales: Cooperating Skills, Empathy, Impulsivity, and Disruptiveness. There are four forms of the scale: self, peers, teacher, and parent ratings – the first two were used in the present study. The Greek version exhibited a clear four factor structure of Cooperating Skills, Empathy, Quick temperedness, and Disruptiveness. The rating scale for this instrument ranges from 1 = Strongly Disagree to 5 = Strongly Agree. Cronbach's alphas for self – ratings for the present study were .85, .82, .90, and .93, for the four subscales respectively.

In the peer form of MASCS, peers evaluate the social skills of their mates thus providing a more 'objective' score of one's social skills than self-reports. For the present study we obtained six peer ratings for every student, that is each student completed MASCS six times with reference to six of his or her classmates respectively. A composite measure of the six scores served as the peer rating for each of the MASCS subscales. Peers to be evaluated were assigned randomly by the researchers. Cronbach's alphas for peer ratings were .88, .85, .92, and .94 for the four subscales respectively.

Preference for Group Work. The Greek version (Goudas, Magotsiou & Hatzigeorgiadis, in press) of the Feelings Toward Group Work scale (Cantwell & Andrews, 2002) was used. This is an 18-item self-report scale assessing three factors: Preference for Group Learning, Preference for Individual Learning, and Discomfort in Group Learning. Goudas et al., (in press) reported the same three factor structure for a 24-item Greek version of the scale alongside satisfactory results regarding convergent and criterion validity, internal consistency, social desirability and test-retest reliability. Items were rated on a 5 – point scale from 1 = Strongly Disagree to 5 = Strongly Agree. Cronbach's alphas for the present study were .87, .83, and .95 respectively.

Results

A preliminary analysis was conducted to test for possible instructor differences, the two classes that formed the experimental group were compared on the pre-test measures. A MANOVA with self-ratings of Cooperating Skills, Empathy, Quicktemperedness, and Disruptiveness as the dependent variables showed non-significant differences, $F(4, 51) = .71, p > .05$. A MANOVA with peer ratings of Cooperating Skills, Empathy, Quicktemperedness, and Disruptiveness showed non-significant differences, $F(4, 52) = 1.79, p > .05$. Finally, a MANOVA with Preference for Group Learning, Preference for Individual Learning, and Discomfort in Group Learning as dependent variables also showed non-significant differences, [$F(3, 53) = .97, p > .05$] between the two classes. Similarly, the two classes that formed the control group were compared on the pre-test measures. A MANOVA with self-ratings of Cooperating Skills, Empathy, Quicktemperedness, and Disruptiveness as the dependent variables showed non-significant differences, $F(4, 52) = 2.30, p > .05$. A MANOVA with peer ratings of Cooperating Skills, Empathy, Quicktemperedness, and Disruptiveness showed significant differences, $F(4, 52) = 5.61, p < .05$. Finally, a MANOVA with Preference for Group Learning, Preference for Individual Learning, and Discomfort in Group Learning as dependent variables showed non-significant differences, [$F(3, 53) = .60, p > .05$]. Since the two experimental classes did not differ in any of the measures and the two control classes differed in one out of three sets of measures, it was decided to proceed comparing the control with the experimental group.

Table 2 presents descriptive statistics for the variables of the study. A 2 x 2 repeated measures MANOVA, with self-ratings of Cooperating Skills, Empathy, Quicktemperedness, and Disruptiveness as the dependent variables, Time of Measure as the within-subject factor and Group as the between-subjects factor, showed a significant

Group X Time multivariate interaction, $F(4, 99) = 35.28, p < .05, \eta^2 = .59$. Univariate tests indicated a significant interaction effect for all of the dependent variables: for Cooperating Skills - Self, $[F(1, 99) = 36.36, p < .05, \eta^2 = .26]$, for Empathy - Self, $[F(1, 99) = 112.98, p < .05, \eta^2 = .52]$, for Quicktemperedness - Self, $[F(1, 99) = 42.31, p < .05, \eta^2 = .29]$, and for Disruptiveness - Self, $[F(1, 99) = 42.27, p < .05, \eta^2 = .29]$.

To further investigate these interactions, the two groups (experimental and control) were compared before and after the intervention, using Tukey's Honestly Significant Difference test (Vincent, 1995, p. 159, formula 9.14 for comparing equal groups). The analyses showed that there were no significant differences before the intervention on the four dependent variables. After the intervention there were significant differences in all four dependent variables with the Experimental group scoring higher than the Control group on Cooperating Skills - Self and on Empathy - Self and lower on Quicktemperedness - Self and on Disruptiveness - Self.

A 2 x 2 repeated measures MANOVA, with peer ratings of Cooperating Skills, Empathy, Quicktemperedness, and Disruptiveness as the dependent variables, Time of Measure as the within-subject factor and Group as the between-subjects factor showed a significant Group x Time multivariate interaction, $[F(4, 109) = 12.63, p < .05, \eta^2 = .32]$. Univariate tests indicated a significant interaction effect for all of the dependent variables: for Cooperating Skills - Peers: $[F(1, 109) = 47.06, p < .05, \eta^2 = .30]$, for Empathy - Peers, $[F(1, 109) = 26.14, p < .05, \eta^2 = .19]$, for Quicktemperedness - Peers, $[F(1, 109) = 29.13, p < .05, \eta^2 = .21]$, and for Disruptiveness - Peers, $[F(1, 109) = 11.35, p < .05, \eta^2 = .092]$.

Tukey's Honestly Significant Difference test showed that there were no significant differences before the intervention on the four dependent variables. After the

intervention, there were significant differences in all four dependent variables with the Experimental group scoring higher than the Control on Cooperating Skills – Peers and on Empathy - Peers and lower on Quicktemperedness – Peers and on Disruptiveness – Peers.

A 2 x 2 repeated measures MANOVA, with Preference for Group Learning, Preference for Individual Learning, and Discomfort in Group Learning as the dependent variables, Time of Measure as the within-subject factor and Group as the between-subjects factor showed a significant Group X Time multivariate interaction [$F(3,109) = 33.27, p < .05, \eta^2 = .48$]. Univariate tests indicated a significant interaction effect for all three dependent variables: Preference for Group Learning: [$F(1, 109) = 54.59, p < .05, \eta^2 = .33$], Preference for Individual Learning, [$F(1, 109) = 4.05, p < .05, \eta^2 = .035$], and Discomfort in Group Learning, [$F(1, 109) = 82.4, p < .05, \eta^2 = .43$].

Tukey's Honestly Significant Difference test showed that there were significant differences before the intervention on the three dependent variables with the Experimental group scoring lower on Preference for Group Learning and higher on Preference for Individual Learning, and Discomfort in Group Learning. After the intervention there were significant differences with the Experimental group scoring higher than the Control on Preference for Group Learning and lower on Discomfort in Group Learning.

Discussion

The results of the present study showed that students who participated in a cooperative learning program, developed on the basis of specific social skills as learning objectives, showed enhanced social skills and attitudes toward group work shortly after the completion of the program. More specifically, students who participated in the

program, compared to those of a control group, increased their cooperative skills and empathy, and decreased their quicktemperedness, and their tendency to disrupt. These findings held both for self – reports and for peer assessment. Moreover, students who participated in the program increased their preference for working in groups, and decreased their discomfort with group work.

The results of the present study strengthen respective findings reported by Orlick (1981), Polvi and Telama (2000) and Dyson (2001, 2002) regarding the effects of cooperative learning physical education programs on students' social skills.

Furthermore, the present results provide a more “objective” indication of students' social skills - peer assessment - coupled with self–reports and also with students' attitudes toward group work. The results of the present study are not comparable with other cooperative learning studies in physical education showing gains on student achievement (Barrett, 2005; Johnson & Ward, 2001) as the program was developed towards social skills and secondary towards student achievement.

The present study was developed on the premise that social skills can be a valuable curricular target in physical education. Indeed, there have been claims in physical education that social–emotional development should be a central pursuit of curriculum (Laker, 2000; Tjeerdjma, 1999). The present findings attest to this notion and provide evidence that the development of social skills is an achievable goal in physical education, provided that respective learning objectives are set and programs are structured toward achieving these aims. Physical educators and youth sport coaches are in a position to advance students' social skills by structuring and implementing respective programs.

The results of the self-reports regarding social skills were generally stronger than those of peer reports, thus, it appears that there is some discrepancy between these two forms of assessment. However, this is not unexpected as these two forms capture different perceptions of different agents. In a meta-analysis, Renk and Phares (2004) showed that correlations between self- and peer-ratings were lower than correlations between other pairs of informants such as parent – peers and parent – teacher. Nevertheless, both forms of assessment are necessary in evaluating respective programs. As Renk and Phares (2004) claim, the assessment of children's social competence is optimized when multiple sources of data are utilized. However, the discrepancy between self- and peer-ratings indicates that, in future work, direct behavioral observation which is considered the most objective method for assessing social skills (Merrell & Gimpel, 1998) needs to be utilized.

The improvement of students' attitudes toward group work in the experimental group alongside the improvement of their social competence is an indication that improvement in social skills may lead to more positive attitudes toward group work. Although the present results do not allow for conclusions regarding the causal relationship of these two concepts, it is plausible to hypothesize that as one improves his or her social skills and feels more competent and at ease to work effectively in group situations, he or she would develop more favorable attitudes toward group work. However, caution should be applied to the interpretation of these results as there were initial differences between the experimental and the control group.

A limitation of the study that needs to be acknowledged is the lack of retention and transfer measures of social skills. Thus, it was not possible to examine whether students retained the skills they acquired and whether they employed these skills in

contexts other than the one in which they were learned and practiced. The results of this study could also be strengthened if the program was introduced to the control group after its implementation to the experimental group as in other studies evaluating life skills programs (Goudas, Dermitzaki, Leondari & Danish, 2006; O' Hearn & Gatz, 1999, 2002). These studies allowed for a follow-up measure and showed retention of the skills learned. Another limitation is that intact classes were assigned in the experimental and in the control replication conditions. The random assignment by groups creates both methodological and statistical limitation (Papaioannou, Marsh, & Theodorakis, 2004). Nevertheless, this resembles a real-life situation since the program would normally be provided to normal classes of students. A final limitation regards the assignment of a control and an experimental class in each school. This choice was made in order to ensure matching of environmental conditions and of teachers between the control and the experimental group. Nevertheless, this may have resulted in possible contamination between the two conditions. Despite these limitations, the results of the present study attest to the potential of cooperative physical education programs to enhance students' social skills and develop positive attitudes towards group work.

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Table 1Overview of the program

	Social skills – Learning objectives	Theoretical approach of cooperative learning	Lesson content
1	Understanding the importance of collaboration in class and in daily life, characteristics of cooperation, introduction to teaching methods	Activities aiming at understanding the 4 approaches of cooperative learning.	a) Classroom cooperative activities b) demonstration of reciprocal teaching cards
2	Helping each other to achieve a goal	Conceptual approach	Volleyball overhand pass. Non-homogeneous pairs, feedback, cards of reciprocal teaching, alternative roles, groups of four.
3	Helping each other to achieve a goal	Conceptual approach	Volleyball forearm pass. Non-homogeneous pairs, feedback, reciprocal teaching cards, alternative roles, groups of four.

4	Achieving both individual and team goals	Curricular approach	Basketball free throws competition. Four non-homogeneous teams, initial individual and team score (5 shoots for each student), team goal (20% > higher than the initial), post-test declaring winners and setting new goals.
5	Achieving both individual and team goals	Curricular approach	Basketball jump – shot competition. Four non-homogeneous teams, initial individual and team score (5 shoots for each student), team goal (20% > higher than the initial), post-test declaring winners and setting new goals.
6	Solving problems cooperatively	Complex instruction approach	Dancing composition. Demonstration of a dancing pattern, three teams, every team to create one part based on the dancing pattern, bonding and inter teaching, all students in one team, presentation.
7	Solving problems cooperatively	Complex instruction approach	Solution to an open –end problem. Class divided to four teams asked to devise 2 games – rules: 2 balls, the ball moves by rolling with any part of the body, two goalkeepers, the aim being which team will score more goals, the rest of the rules are set by the students, presentation
8	Interacting with peers	Structural approach	Volleyball skills using JIGSAW structure

- | | | | |
|----|---|---|--|
| 9 | Interacting
with peers | conceptual
approach | Dancing skill. Demonstration of three figures
from a Greek folk dance, non homogeneous
pairs, successively students dancing in groups of
four, six, eight and finally the whole class
together |
| 10 | Following or
leading in a
group
depending
upon the
circumstances | curricular
approach
(Sports'
Education
model) | Basketball class tournament |
| 11 | Following or
leading in a
group
depending
upon the
circumstances | curricular
approach
(sport
education
model) | Basketball class tournament |
| 12 | Following or
leading in a
group
depending
upon the | curricular
approach
(sport
education
model) | Volleyball class tournament |

circumstances

13 Following or curricular Volleyball class tournament
leading in a approach
group sport
depending education
upon the model
circumstances

Table 2
Mean and SD scores as a function of group and testing

	Experimental					Control				
	Pre		Post		η^2	Pre		Post		η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Preference for Group Learning	3.30 _a	.59	4.10 _a	.66	.60	3.60 _b	.58	3.58 _b	.74	.02
Preference for Individual Learning	3.19 _a	.81	3.13	.74	.01	2.81 _b	.81	3.00	.94	.09
Discomfort in Group Learning	3.07 _a	.94	2.02 _a	.80	.64	2.71 _b	.93	2.73 _b	.92	.00
Cooperating Skills – Self-rating	3.32	.83	4.10 _a	.57	.67	3.46	.76	3.44 _b	.83	.00
Empathy – Self-rating	3.23	.56	4.07 _a	.46	.87	3.45	.86	3.35 _b	.79	.02
Quicktemperedness - Self-rating	3.28	1.03	2.34 _a	.64	.60	3.38	.94	3.23 _b	.80	.04
Disruptiveness Self-rating	2.24	1.03	1.74 _a	.66	.74	2.61	1.13	2.70 _b	1.05	.06
Cooperating skills – Peers rating	3.33	.83	3.77 _a	.61	.51	3.41	.70	3.35 _b	.64	.03
Empathy – Peers rating	3.09	.99	3.51 _a	.76	.37	3.17	.95	3.14 _b	.87	.00
Quicktemperedness Peers rating	2.87	.86	2.44 _a	.55	.47	2.99	.78	2.96 _b	.71	.01
Disruptiveness - Peers rating	2.53	1.08	2.27 _a	.76	.19	2.59	1.04	2.61 _b	.98	.00

Significant mean differences between the Experimental and the Control group in the same row are indicated by different subscripts, $p < .05$ in the Tukey's Honestly Significant Difference test.

