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Effects of Physical Activity on Physical Fitness, Cognition and Self-Concept

A Comparison between Reciprocal and Command Teaching Styles

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***Abstract*—Using the reciprocal and the command teaching styles in physical education classes in middle schools showed improvements in psychomotor, cognitive and emotional domains. Subjects were 240 middle school students. They were randomly selected and assigned to an experimental group taught by reciprocal style and control group taught by the command style. Variables consisted of four physical and motor skills; two cognitive; and three emotional measures. A physical education program lasted ten weeks were conducted on the subjects. Results showed that the experimental group was superior on the control group. It was concluded that reciprocal teaching style was more effective in teaching physical education classes than the command teaching style.**

***Keywords*—reciprocal, command, teaching, style, physical education.**

I. Introduction

The Spectrum of Teaching Styles in the field of physical education was introduced by Muska Mosston. He examined the act of teaching and learning from a structural approach rather than from preference or situational need. What is the body of knowledge about teaching that is beyond idiosyncratic behavior? That inquiry led Mosston to the discovery that teaching behavior is a chain of decision making (Mosston & Ashwort, 2008). Good and Brophy (1997, p. 358) stated, that teacher decision making, guided by clear goals, is the key to effective instruction. Many of the tasks using the parachute in physical education require the command style. Learners, working as a group, are expected to physically move in a synchronized behavior. All activities in the command style focus completely on the physical channel with no connection to any other attributes on other developmental channels (Mosston & Ashwort, 2008). The defining characteristics of the reciprocal style are social interactions, reciprocation, receiving and giving immediate feedback. Peer teaching, partner learning, cooperative learning, and tutor–learner are primarily (Metzler, 1990, p. 286).

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I. Purpose

The purpose of the study was to examine the effects of instructed physical activity using the reciprocal and the command teaching styles on three developmental domains namely: psychomotor, cognitive and emotional domains in middle schools students.

II. Method

A. *Subjects*

The subjects were 240 students randomly selected from middle schools. They were randomly assigned to an experimental group consisted of 121 students that were taught by the reciprocal teaching style and a control group consisted of 119 students that were taught by the command style.

B. *A Teaching Program*

A teaching program consisted of two physical education units, soccer and long jump was conducted on both groups. The program lasted ten weeks. The experimental group was taught using the reciprocal teaching style and the control group was taught using the command teaching style.

In the command teaching style the teacher provided the directions, including rhythm and posture, while the learner complied by performing as accurately as possible, striving to emulate precise performance (Goldberger, Ashworth & Byra, 2012).

In the reciprocal teaching style each student were assigned a partner. At the beginning of the lesson the purpose of the teaching style was stated and the roles of the doer, observer, and the teacher described. Then the specific task was announced and delivered and the criteria sheet explained. The teacher then instructed the pair to decide who would first be the doer and observer, and to begin the task when ready.

C. *Variables*

The variables consisted of nine measures: six for the psychomotor domain included: Body Mass Index, strength, muscular endurance, cardiovascular fitness measured by 1600 meter run, soccer skills test and long jump test. The cognitive domain was measured by soccer and athletic knowledge tests. The emotional domain was measured by a self-concept scale that was specially developed for this study.

D. *Data Analysis*

Data were collected before and after conducting the teaching program. The grouped t-test was used to examine the equivalence of the experimental and control groups in the pre program measures, and to examine the differences between the two groups in the post program measures. ANCOVA was conducted on the variables that were showed significance difference between the two groups at the pre program measures. The percent of changes from pre to post program were calculated.

III. Results

Table.1 shows the results of the grouped t-test analysis for the differences between the experimental and the control groups in the post program measures. The results revealed statistically significant differences between the two groups in the favor of the experimental group in all measures except for: the BMI, strength, and cognitive soccer measure. This indicates that the reciprocal teaching physical education style was more effective than the command style in improving endurance, cardiovascular fitness, soccer skills, athletic skills, cognitive athletic, and emotion measures. While the improving in the BMI, strength, and cognitive soccer measures were convergent in using either the reciprocal or the command teaching physical education styles.

TABLE I. DESCRIPTIVE DATA OF THE POST-PROGRAM MEASURES AND THE T-TEST FOR THE EXPERIMENTAL AND THE CONTROL GROUPS

Measure	Experimental (n=121)		Control (n=119)		t-test	α
	Mean	*S.D.*	*Mean*	*S.D.*		
BMI (%)	22.38	5.18	22.84	4.37	-0.68	0.50
Strength (times)	6.88	4.62	6.74	6.02	0.30	0.67
Endurance (times)	33.94	8.12	29.62	8.59	4.00	0.00
Run 1600 m (min)	11.24	3.80	11.81	3.81	-1.17	0.01
Soccer Skills	35.66	6.29	33.08	6.57	3.11	0.00
Athletic Skills	3.40	0.64	2.85	0.77	5.94	0.00
Cognitive Soccer	21.12	3.44	19.37	3.87	0.07	0.94
Cognitive Athletic	11.36	1.28	8.97	2.27	10.06	0.00
Emotin	101.92	12.49	98.92	10.10	2.04	0.04

Table .2 and Fig.1 show the mean percentage changes of the pre- and post-program measures for the experimental and the control groups. The results revealed that the mean percentage changes of the experimental group ranged between 1.19 % for the emotion measure and 34.98 % for the cognition measure, while the mean percentage changes of the control group ranged between 0.21 % for the emotion measure and 15.53 % for the cognition measure. The results indicated that the pattern of changes for both groups was the same; however the changes for the experimental group were obviously more than the control group.

It was concluded that reciprocal style was more effective in teaching physical education and had positive effects on physical, skill, cognitive, and emotional domains.

TABLE II. MEAN PERCENTAGE CHANGES OF THE PRE- AND THE POST-PROGRAM MEASURES FOR THE EXPERIMENTAL AND THE CONTROL GROUPS

Measure	Experimental		Control	
	Mean Differences	*Percentage Change*	*Mean Differences*	*Percentage Change*
Finess	4.73	18.38	1.13	6.95
Skills	4.21	16.33	2.89	13.96
Cognition	4.57	34.98	1.76	15.53
Emotin	0.70	1.19	0.62	0.21

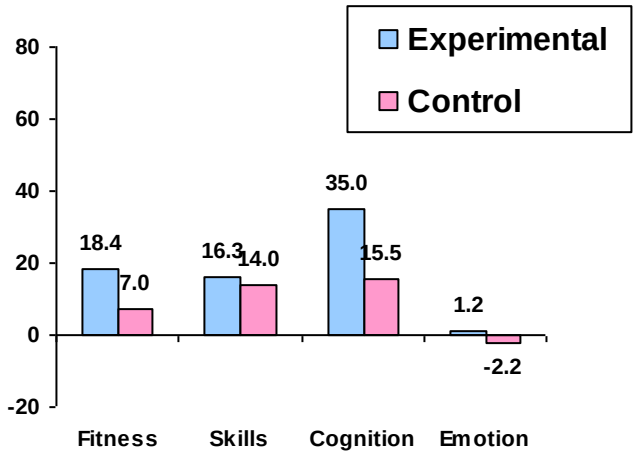

Figure.1 Mean percentage changes of the pre- and the post-program measures for the experimental and the control groups

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