Volume LV, Issue 4, 4th Quarter 2018

International Journal of Physical Education

A Review Publication

Published by MEYER & MEYER SPORT

The reciprocal and self-check teaching styles in physical education: Effects in basketball skills' performance, enjoyment, and behavioural regulations

N. Digelidis[1], M. Byra[2], D. Mizios[1], S. I. Syrmpas[1] & A. Papaiounnou[1] ([1]Trikala, Greece / [2]Wyoming, USA)

Abstract

The impact of two different teaching styles on junior high school students' intrinsic – extrinsic motivation, lesson satisfaction and their performance in three basketball skills: chest-pass, dribbling, and jump shot were examined. One hundred and six junior high school students (57 boys and 49 girls) aged 12 years old participated in this survey, which was held through motor tests and questionnaires. The students were assigned into three groups (control group, the reciprocal teaching style group and the self–check teaching style group). The self–check style group had higher scores concerning intrinsic motivation and identified regulation compared with the reciprocal style group, while the reciprocal style group had higher scores concerning autonomy. Boys showed higher scores concerning basketball skills' tests compared with girls. The results imply that the teaching style plays an important role in children's motor improvement and motivation.

Key words: teaching styles, self-determination theory, motor skills, fun

1 Introduction

The spectrum of teaching styles (Mosston & Ashworth, 2002) constitutes one of the dominant ideologies in the field of sports pedagogy throughout the world (Byra, 2006a; Cothran et al., 2005; Goldberger, 1992). Mosston and Ashworth's (2002) spectrum of teaching styles is a framework "that delineates alternative teaching-learning styles" (p. 1) based on the deliberate decisions teachers and students make within the instructional setting. Mutually exclusive learning objectives are met when specific decisions are

ordered according to "who (teacher or student) makes which decisions about what and when (p. 4)." These learning objectives differentiate one teaching style from another in the spectrum.

1.1 Spectrum teaching styles and student skill learning

Deci and Ryan (2000) suggested that the level of self-determination plays an important role in students' motivation. This level is related with teaching strategies that teachers follow and implement daily because it seems that there is a relation between the theory of self-determined motivation (Deci & Ryan, 2000) and the spectrum of teaching styles (Mosston & Ashworth, 2002). Teachers can support students' autonomy and self-control of their behaviour, taking into consideration students' point of view, identifying their feelings, providing information or several options, and decreasing pressure and demands (Black & Deci, 2000).

One of the first studies examining the relation between students' motivation and the spectrum of teaching styles conducted (Goudas, M, Biddle, Fox, & Underwood, 1995) indicated that inclusion teaching style promoted students' intrinsic motivation and task goal involvement more than the practice teaching style. Similarly, the findings of a study conducted by Morgan, Kingston, and Sproule (2005) revealed that inquiry and peer-teaching styles such as reciprocal and guiding discovery teaching approaches promoted a more mastery-oriented motivational climate than direct teaching styles (command and practice teaching approaches). A PE lesson delivered through the reciprocal style for 15 weeks lead students to report positive motivational reactions such as challenge and enjoyment (Byra, 2006b).

The findings of a study suggested that the self-check teaching style compared to practice teaching style enhanced courses' mastery-oriented climate and thus urged students to adopt mastery goals (Papaioannou Theodosiou, Pashali, & Digelidis, 2012). Another study explored the effects of practice and inclusion teaching styles on students' motivation. The findings supported that the implementation of both inclusion and practice teaching styles could promote equally students' autonomy and identified motivation (Kirby, Byra, Readdy, & Wallhead, 2015). Finally, Pitsi and her colleagues (2015) explored the differences between the reciprocal, the self-check and the command teaching styles related to intrinsic-extrinsic motivation, and the motivational climate emphasized on autonomy. The findings suggested that both peer-teaching styles promoted students' intrinsic motivation, identified regulation, and autonomy while contributing to a decrease of extrinsic motivation and amotivation compared to the command style. However, the self-check teaching style was the most effective in promoting student motivation and autonomy.

1.2 Spectrum teaching styles and students' motivation

Many studies have examined the influence of spectrum teaching styles on variables associated with teaching and learning, in particular examining student knowledge gains (e.g., Cox, 1986; Jenkins & Byra, 1997), student behaviours (e.g., Byra & Jenkins, 1998; Byra & Marks, 1993; Cirtley, 1983), class climate and students' motivation (e.g., Chatoupis, 2010; Digelidis et al., 2003; Morgan et al., 2005), and teachers' experience with and use of spectrum teaching styles (e.g., Cothran et al., 2005; Curtner-Smith, Todorovich, McCaughtry, & Lacon, 2001; Kulinna & Cothran, 2003; Syrmpas, Digelidis, & Watt, 2015).

Additionally, a substantial number of studies has examined the effect of spectrum teaching styles on students' skill learning. More specifically, Goldberger and his colleagues (1982) found the self-check teaching style, practice and inclusion were equally effective at promoting students' skill learning. On the contrary, the findings of

a study (Boyce, 1992) indicated that command and practice teachings styles were more effective not only on the enhancement of undergraduate students' shooting ability but also on its retention compared to the inclusion teaching style. Similarly, the findings of a study suggested that the practice teaching style led to skill learning more than the reciprocal and the inclusion teaching styles. However, the reciprocal and the inclusion teaching styles were found to be equally effective for college students motor development (Zeng, Leung, Liu, & Bian, 2009). While Kolovelonis and his colleagues (2011) argued that both self check and reciprocal teaching styles were equally effective in promoting student skill learning of basketball drills.

1.3 A short description of reciprocal and self-check teaching styles

In the reciprocal teaching style (C) students form pairs. One of each pair serves as the performer (doer) and the other as the assessor of performance (observer). The observer uses a criterion sheet to help assess the doer's performance (Mosston & Ashworth, 2002). After completing the teacher prescribed task, the students switch from doer to observer and vice versa such that they both experience the roles of doer and observer (Byra, 2004). The teacher only provides role-related feedback to the observer during style C episodes.

In the self-check style of teaching (D), students perform a task and check the accuracy of their work with the help of a teacher prepared task sheet. The self-check teaching style allows students to gain independence in performing a task as they learn to correct errors in their own performance. Students develop kinaesthetic awareness in their motor performance by individually practicing and checking for performance errors (Mosston & Ashworth, 2002). As is the case for style C, the teacher only provides role-related feedback to the students.

1.4 Spectrum teaching styles and students' satisfaction

The findings of a study conducted by Kolovelonis and his colleagues (2011) suggested that students experienced the same level of satisfaction from the lesson delivered by their teachers through the reciprocal or the self-check teaching styles. Furthermore, fifth and sixth-grade students reported being more satisfied with a tennis lesson delivered through the self-check than the reciprocal teaching style (Putmanoglou, Digelidis, Mantis, Papapetrou, & Mavidis, 2008). Byra (2006a) and Morgan with his colleagues (2005) concluded that the implementation of the reciprocal teaching style could increase students' enjoyment. However, little is known about the extent to which teaching styles from the reproduction cluster - specifically the reciprocal and the self-check teaching styles - impact students' intrinsic-extrinsic motivation and autonomy.

1.5 The purpose of the study

The aim of the present study was to investigate the impact of the application of the reciprocal and self-check teaching styles on students' intrinsic-extrinsic motivation, lesson satisfaction, and autonomy, and student motor skill performance specific to the game of basketball. The following questions were addressed: (a) how do the reciprocal and self-check teaching styles affect students' intrinsic-extrinsic motivation, lesson satisfaction, and autonomy, and (b) how do the reciprocal and self-check teaching styles affect student performance specific to basketball passing, dribbling, and shooting.

2 Methodology

2.1 Participants

One hundred and six students of the seventh grade (57 boys and 49 girls) aged twelve years old (M = 12.03, SD = .21 years) participated in the study. Students came from

two different junior high schools of Central Greece and were randomly assigned to three groups (control, reciprocal and self-check teaching styles). The study had permission from the University's Ethics Committee and parents signed an informed consent.

2.2 *Measures*

There were two waves of measurement: a) one before the beginning of the intervention, b) and the second right after the end of the survey. The following basketball tests and scales were used:

a) Dribbling. The dribbling test was used from Harrison's "Basketball skill". (Harrison Basketball Battery, 1969). This test measures the mastery and speed of movement under certain time limits (30 seconds). According to Harrison, the test-retest reliability factor for the specific student age is .95 (Barrow & McGee, 1979; Perkos, 2003).

b) Chest-pass. The Stubbs Ball Handling Test was used (Stubbs Ball Handling Test, 1968). Each participant passed the ball on the wall in three circles of different diameter and height above the ground for 30 seconds. The reliability factor in the chest-pass test is .738 (Barrow & McGee, 1979; Perkos, 2003).

c) Basketball shooting test. A test developed by Weinberg, Fowler, Jackson, Bangall, and Bruya (1991) was used. The target of the participants was to achieve as many basketball shots as they could, outside the perimeter of the 3.66m radius and within 1.5 minutes. The reliability factor of the test is .91 (Weinberg et al, 1991).

d) Enjoyment. A scale of enjoyment during PE lesson was used (Duda & Nicholls, 1992) consisting of five questions. The scale has been effectively adapted in the Greek language for school students by Papaioannou, Milesis, Kosmidou, and Tsigilis (2007). After the general stem "In today's class of PE..." students responded whether they were satisfied by the PE lesson (e.g., "I liked the lesson" etc). Students responded in a five-point Likert scale, starting from "I totally disagree" (=1) to "totally agree" (=5).

e) Intrinsic-extrinsic motivation at the situational level. The Situational Motivation Scale (SIMS) developed by Guay, Vallerand and Blanchard (2000) was used to measure intrinsic, extrinsic motivation and amotivation at the situational level of generality. The scale consists of 16 items and contains four factors. After the general stem "why did you get involved with the activities in today's PE lesson...", students were asked to answer to sub-scales of (a) intrinsic motivation (e.g. "why I believe they (activities) were interesting"), (b) identified regulation (e.g. "I did it for my own good"), (c) extrinsic motivation (e.g. "I felt I had to do them") and (d) amotivation (e.g., "I had no other choice"). Students responded in a five-point Likert scale, starting with "totally disagree" (=1) to "totally agree" (=5). The questionnaire has been effectively adapted for the Greek population by Papaioannou et al. (2007).

2.3 *Intervention design*

The duration of the teaching program was 18 teaching hours of physical education (six weeks at three hours per week). The teaching content was common for all groups (basketball) and took place in the indoor gym of each school, during the regular weekly lesson timetable. In all classes, the same PE instructor (with seven years' of teaching experience in junior high school) held the lessons.

One of the groups was taught based on the reciprocal teaching style, whereas the other one was taught based on the self-check teaching style. The third group (control group) which was not part of the intervention program also attended six lessons on basketball, with the same skills as those of the two intervention groups.

2.4 *Procedure*

The questionnaires were completed in the classroom, in both measurements. The students were initially informed about the procedure and it was emphasised that the participation in the study was on a voluntary basis and the questionnaire was anonymous. They were reassured about the confidentiality of their responses and that these would be used for research purposes only. Students had the right to quit at any time if they so wished.

2.5 *Data analysis*

The internal consistency index (Cronbach's alpha) was at an acceptable (a>.66) or high level (a>.90) for all scales. In order to examine the hypotheses of the study, the following statistical analyses were carried out:

a) Correlation analysis among the four factors of the questionnaire of the intrinsic-extrinsic motivation in a situational level, per measurement, to investigate the existence or lack of the self determination dimension, which states that the various motivation styles being close to one another show greater correlation (Ryan & Connell, 1989).

b) In order to investigate the intervention effects, there were some co-variation analyses. In each case, it was examined whether there were statistically significant differences in the variables under question, in the second measurement among the three groups (intervention and not), having controlled their initial differences in the first measurement. The level of statistical significance was fixed at a = .05.

3 Results

3.1 *Correlations*

Pearson correlations presented in Table 1. Intrinsic motivation was positively related with identified regulation ($r = .69$, $p < .001$) and negatively with extrinsic motivation ($r = -.18$, $p < .001$) and amotivation ($r = -.36$, $p < .001$).

Table 1

Interrelations among the four factors in the questionnaire, of the intrinsic-extrinsic motivation in the situational level, in the two measurements of the survey.

	Identified regulation	Extrinsic motivation	Amotivation
1st measurement			
Intrinsic motivation	.69**	-.18	-.36**
Identified regulation		-.12	-.36**
Extrinsic motivation			-.35**
2nd measurement			
Intrinsic motivation	.74**	-.23**	-.31**
Identified regulation		-.15	-.36**
Extrinsic motivation			.42**

*p < .05., **p < .01

3.2 *Checking the differences between first and second measurement in basketball skills*

Multivariate Analyses of Covariance (MANCOVA) computed in order to examine differences between experimental and control groups in the dependent variables, that is, the variables assessed at the end of the intervention. In each analysis, the first

measurement used as a covariate in order to control initial differences between control and experimental groups. This procedure ensured that any possible initial differences would not be responsible for possible differences among the three groups. The same procedure followed for motor skill tests too. In the cases that significant differences emerged ($p < .05$), follow-up ANCOVAs were computed and these results presented below.

The ANCOVA results for the chest-pass test showed that there were statistically significant differences between the two genders ($F[1.90] = 37.2$, $p < .001$, $\eta^2 = .29$), between groups ($F[2.90] = 8.15$, $p < .001$, $\eta^2 = .21$) and interaction between gender and group ($F[2.90] = 2.77$, $p < .05$, $\eta^2 = .08$). More specifically, the reciprocal teaching group had greater scores in chest-pass ($M = 6.92 \pm .23$) compared with the self-check group ($M = 5.06 \pm .26$) and the control group ($M = 5.86 \pm .17$). Boys ($M = 7.66 \pm .14$) had higher records than girls ($M = 6.03 \pm .17$).

For the dribbling test, there were statistically significant differences between the two genders ($F[1.90] = 19.7$, $p < .001$, $\eta 2 = .18$), between groups ($F[2.90] = 19.6$, $p < .001$, $\eta 2 = .39$) and non-significant gender X group interactions ($F[2.90] = 0.45$, $p > .05$, $\eta 2 = .08$). More specifically, the reciprocal teaching group showed higher scores ($M = 17.36 \pm .31$) compared with the self-check group ($M = 17.12 \pm .36$) and the control group ($M = 16.51 \pm .23$). Boys ($M = 18.88 \pm .21$) had higher records than girls ($M = 17.02 \pm .26$).

For the basketball shooting test, there were statistically significant differences between the two genders ($F[1.90] = 47.8$, $p < .001$, $\eta 2 = .34$), between groups ($F[2.90] = 3.19$, $p < .05$, $\eta 2 = .09$) and also significant interaction between gender and group ($F[2.90] = 2.92$, $p < .05$, $\eta 2 = .08$). More specifically, the reciprocal teaching group showed higher scores ($M = 2.96 \pm .17$) compared with the self-check group ($M = 2.49 \pm .19$) and the control group ($M = 2.43 \pm .13$). Boys ($M = 4.12 \pm .17$) had higher scores than girls ($M = 1.91 \pm .19$).

The results for enjoyment showed that there were no statistically significant differences due to gender ($F[1.92] = .254$, $p > .05$, $\eta 2 = .003$), class ($F[2.92] = .6.76$, $p > .05$, $\eta 2 = .18$) and the interaction between gender and class ($F[2.92] = 1.10$, $p > .05$, $\eta 2 = .035$).

The results of the covariance analysis concerning intrinsic motivation showed that there were no statistically significant differences due to gender ($F[1.92] = 1.03$, $p > .05$, $\eta 2 = .01$), as well as in the interaction between gender and class ($F[2.92] = 0.32$, $p > .05$, $\eta 2 = .01$) but there were statistically important differences due to class ($F[2.92] = 2.94$, $p < .05$, $\eta 2 = .08$). The checking of the regulated averages showed that after the intervention the self-check teaching group appeared to have higher scores ($M = 4.57 \pm .12$) in comparison with the reciprocal teaching group ($M=3.98 \pm .11$) and the control group ($M = 4.04 \pm .08$).

Finally, regarding identified regulation, there were no statistically significant differences due to gender ($F[1.91] = 196$, $p > .05$, $\eta 2 = .02$) and the interaction between gender and class ($F[2.91] = .518$, $p > .05$, $\eta 2 = .01$) but there were statistically important differences due to class ($F[2.91] = 2.96$, $p < .05$, $\eta 2 = .08$). More specifically, the checking of the averages showed that after the intervention the self-check teaching group showed higher scores ($M = 4.37 \pm .12$), in comparison with the reciprocal teaching ($M = 3.86 \pm .11$) and the control group ($M = 4.06 \pm .08$).

There were no statistically significant differences due to class, gender or the interaction of them for extrinsic motivation and amotivation. Table 2 displays the adjusted means (M), as well as the standard errors (SD) of the second measurement in all dependent variables in the intervention groups (reciprocal teaching and self-check) and the non-intervention group, respectively.

Table 2

Adjusted means of the 2nd measurement after the co-variation analysis of all the dependent variables of the research for the three survey groups.

	Reciprocal Teaching Group		Self-Check Teaching Group		Control Group	
	M	SD	M	SD	M	SD
Passing test	6.92**	.23	5.06	.26	5.86	.17
Dribbling test	17.36**	.31	17.12	.34	16.51	.23
Shooting test	2.96*	.17	2.49	.19	2.43	.13
Enjoyment	4.18	.13	4.21	.14	3.94	.09
Intrinsic motivation	3.98	.11	4.57*	.12	4.04	.08
Identified regulation	3.86	.11	4.37*	.12	4.06	.08
Extrinsic motivation	3.08	.15	2.98	.17	2.69	.11
Amotivation	4.18	.13	4.21	.14	3.94	.09

*p<.05., **p<.001

4 Discussion

The present study examines the influence of reciprocal teaching style, the self-check teaching style on the outcome of three basketball skills, as well as on the factors of enjoyment and the intrinsic-extrinsic motivation at the situational level. The results of the study supported, in a satisfactory grade, the fact that the methods chosen to be implemented and examined had a positive impact on learning and maintaining certain suitable motor skills, as well as on forming positive stimulating behaviours of self-action and self-regulation of the students.

The total amount of interrelations among the four factors of the questionnaire 'Intrinsic-extrinsic motivation in the situational level', confirms the presence of the self-determination dimensions in this specific study (Deci & Ryan, 2004). A dimension which states that the motivational types exist next to each other shows a greater interrelation (Ryan & Connell, 1989).

The results showed the positive contribution of the teaching styles in passing skills, dribbling and shooting, as the students who practiced in each of the survey phases statistically improved their performance significantly, in comparison with their classmates who followed the same set of exercises, without using the methods of reciprocal teaching and self-check.

The findings of the study suggest that the mutual assistance in the reciprocal teaching style and the self-observation in the self-check method may help students to improve their skills. The students' improvement in the reciprocal teaching style, in all three motor skills, suggest the effectiveness of the 'participating observation' on the improvement of motor skills. The close relationship developed between the 'executor/performer' and the 'observer', was probably stimulating, in the attempt to achieve better feedback and execution. The findings of the present study confirm the

results of previous studies on the effectiveness of reciprocal teaching in students' learning motor skills (Goldberger, Gerney & Chamberlain, 1982; Goldberger, 1983) and university students' learning (Beckett, 1991; Boyce, 1992). However, the positive contribution of the self-check method should not be underestimated. Given the limited presence of the self-check method in the Greek and international literature (Zimmerman & Kitsantas, 1997; Kitsantas, Zimmerman & Cleary, 2000; Byra, 2000), these results are of major importance for the effectiveness of self-check teaching style in learning motor skills.

Boys showed higher scores in all three skills under examination, a fact that shows a clear supremacy of the boys especially due to their greater practice and contact with basketball in relation to the girls. A rational explanation of the different skill levels of the girls in comparison to that of the boys could be the old-fashioned beliefs about men's and women's sports (e.g., football or volleyball) that can still be found, even today, in the Greek schoolyard. Moreover, the use of reciprocal teaching and self-check methods may reinforce the intrinsic motives of the girls, giving them the chance of becoming independent and checking their rhythm of learning. Based on the assumption that girls are more oriented towards learning (White, Kavussanu & Guest, 1998; Williams, 1998), the effort of reinforcing the girls' self-determination must be taken into consideration by PE teachers.

As far as the dependent variables of the questionnaire are concerned, the results showed statistically significant differences in the intrinsic motivation and identified regulation among the groups, with the self-check method demonstrating higher scores than the reciprocal teaching style. Concerning enjoyment, the average scores of the self-check teaching group were higher than that of the reciprocal teaching group and the control group. In the extrinsic motivation and the amotivation case, maintaining the scores in low levels in all groups reinforces the significant contribution of teaching styles for the learning process, putting emphasis on practice, effort, and participation.

It seems that when the self-check teaching style encourages the students to discover their abilities themselves, to set personal targets, to self-evaluate, to take an active part in the decision-making procedure, then the teaching method contributes to the improvement of the self-esteem level, the self-perception, and the life-lasting intrinsic motivation of the trainees. Adopting teaching styles that enhance students' motivation is important both in improving the performances in the motor section and in promoting a healthy psychological environment, where enjoyment, autonomy, and self-determination are highly important. Perhaps the immediate effect one student may have on their classmate in the reciprocal teaching style or on themselves in the self-check method helps in paying greater attention, contributing to a better processing of the available information and in creating mechanisms for spotting and correcting mistakes. The findings of the present study imply that the implementation of self-check and reciprocal teaching styles may enhance students' skills. Additionally, both teaching styles may promote self-regulation processes. PE teachers aimed at creating a learning context that promotes physical activity as a lifelong habit should plan and incorporate, among other things, the following basic principles: a) the use of productive or indirect teaching methods; b) the promotion of the autonomy and self determination of the students; and c) the promotion of enjoyment and psychological well-being which physical activities offer. By functioning in such an educational environment, students fully comprehend the teaching object, develop their self-regulation skills, and assume the responsibility of the learning process.

References

Barrow, H., & McGee, R. (1979). *A practical approach to measurement in physical education.* Philadelphia: Lea & Febiger.

Beckett, K. D. (1991). The effects of two teaching styles on college students' achievement of selected physical education outcomes. *Journal of Teaching in Physical Education, 10*, 153–169.

Black, A. E., & Deci, E. L. (2000). The effects of instructors' autonomy support and students' autonomous motivation on learning organic chemistry: A self-determination theory perspective. *Science Education, 84*, 740–756.

Boyce, A. (1992). The effects of three styles of teaching on university students' motor performance. *Journal of Teaching in Physical Education, 11*, 389–401.

Byra, M. (2000). A review of spectrum research: The contribution of two eras. *Quest, 52*, 229–245.

Byra, M. (2004). Applying a task progression to the reciprocal style of teaching. *Journal of Physical Education, Recreation, and Dance, 75*, 42–46.

Byra, M. (2006a). Teaching styles and inclusive pedagogies. In D. Kirk, D. Macdonald, & M. O'Sullivan (Eds.), *The handbook of physical education* (pp. 449–466). London: Sage.

Byra, M. (2006b). The Reciprocal Style of Teaching: A Positive Motivational Climate. Paper presented at the AIESEP World Congress, Jyvaskyla, Finland, July 2006.

Byra, M., & Jenkins, J. (1998). The thoughts and behaviors of learners in the inclusion style of teaching. *Journal of Teaching in Physical Education 18*, 26–42.

Byra, M., & Marks, M. C. (1993). The effect of two pairing techniques on specific feedback and comfort levels of learners in the reciprocal style of teaching. *Journal of Teaching in Physical Education*, 12, 286–300.

Chatoupis, C. (2010). Spectrum research reconsidered. *International Journal of Applied Sports Sciences, 22*, 80–96.

Cleland, F. E. (1994) Young children's divergent movement ability: Study II. *Journal of Teaching in Physical Education, 13*, 228–241.

Cothran, D. J., Kulinna, P. H., Banville, D., Choi, E., Amade-Escot, C., MacPhail, A., Macdonald, D., Richard, J. F., Sarmento, P., & Kirk, D. (2005). A cross-cultural investigation of the use of teaching styles. *Research Quarterly for Exercise and Sport, 76*, 193–201.

Cothran, D., Kulinna, P. H., & Ward, E. (2000). Students' experiences with and perceptions of teaching styles. *The Journal of Research and Development in Education, 33*, 93–102.

Cox, R. L. (1986). A systematic approach to teaching sport. In M. Pieron & G. Graham (Eds.), *Sport pedagogy* (pp. 109–116). Champaign, IL: Human Kinetics.

Curtner-Smith, M. D., Todorovich, J. R., McCaughtry, N. R. & Lacon, S. A. (2001). Urban teachers' use of productive and reproductive teaching styles within the confines of the national curriculum for physical education. *European Physical Education Review, 7*, 177–190.

Deci, E. L., & Ryan, R. M. (2004). Overview of self-determination theory: An organismic dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3–33). Rochester, NY: University of Rochester Press.

Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R.M. (1991). Motivation in education: The self-determination perspective. *Educational Psychologist, 26*, 325–346.

Digelidis, N. (2006). Extending the spectrum: An in-depth analysis of the teaching styles taxonomy. *Inquiries in Sport and Physical Education, 4*, 131–147.

Digelidis, N., Papaioannou, A., Laparidis, K., & Christodoulidis, T. (2003). A one-year intervention in 7th grade physical education classes aiming to change motivational climate and attitudes towards exercise. *Psychology of Sport and Exercise, 4*, 195–210.

Duda, J. L., & Nicholls, J. G. (1992). Dimensions of achievement motivation in schoolwork and sport. *Journal of Educational Psychology, 84*, 1–10.

Ernst, M., & Byra, M. (1998). What does the reciprocal style of teaching hold for junior high school learners? *The Physical Educator, 55*, 24–37.

Gallahue, D. L. & Cleland Donnelly, F. (2003). *Developmental physical education for all children.* Champaign, IL: Human Kinetics.

Goldberger, M. (1992). The spectrum of teaching styles: A perspective for research on teaching physical education. *Journal of Physical Education, Recreation, and Dance, 63*, 42–46.

Goldberger, M., & Gerney, P. (1990). Effects of learner use of practice time on skill acquisition of fifth grade children. *Journal of Teaching in Physical Education, 10*, 84–95.
Goldberger, M., & Gerney, P. (1986). The effects of direct teaching styles on motor skill acquisition of fifth-grade children. *Research Quarterly for Exercise and Sport, 57*, 215–219.
Goldberger, M., Gerney, P., & Chamberlain, J. (1982). The effects of three styles of teaching on the psychomotor performance and social skill development of fifth-grade children. *Research Quarterly for Exercise and Sport, 53*, 116–124.
Goudas, M., Biddle, S., Fox, K., & Underwood, M. (1995). It ain't what you do, it's the way that you do it! Teaching style affects children's motivation in track and field lessons. *Sport Psychologist, 9*, 254–254.
Griffey, D. C. (1983). Aptitude X treatment interactions associated with student decision making. *Journal of Teaching in Physical Education, 3*, 15–32.
Guay, F., Vallerand, R. J., & Blanchard, C. (2000). On the assessment of state intrinsic and extrinsic motivation: The situational motivation scale (SIMS). *Motivation and Emotion, 24*, 175–213. doi:10.1023/A:1005614228250
Harrison, E. R. (1969). A test to measure basketball ability for boys. Masters' thesis, University of Florida, 1969. In H. Barrow & R. McGee (Eds.), *A practical approach to measurement in physical education* (pp. 228–231). Philadelphia: Lea & Febiger.
Jenkins, J., & Byra, M. (1997). An exploration of theoretical constructs associated with the Spectrum of Teaching Styles. In F. Carreiro da Costa (Ed.), *Research on teaching and research on teacher education: What do we know about the past and what kind of future do we expect?* (pp. 103–108). Lisbon, Portugal: AIESEP.
Kirby, S., Byra, M., Readdy, T., & Wallhead, T. (2015). Effects of spectrum teaching styles on college students' psychological needs satisfaction and self-determined motivation. *European Physical Education Review*, 21, 521–540. doi: 10.1177/1356336X15585010
Kitsantas, A., Zimmerman, B. J., & Cleary, T. (2000). The role of observation in the development of athletic self-regulation. *Journal of Education Psychology, 92*, 811–817.
Kolovelonis, A., Goudas, M., & Dermitzaki, I. (2011). The effect of different goals and self-recording on self-regulation of learning a motor skill in a physical education setting. *Learning and Instruction, 21*, 355–364. doi: 10.1016/j.learninstruc.2010.04.001
Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory into Practice, 41*, 212–218.
Kulinna, P. H., & Cothran, D. (2003). Physical education teachers' self-reported use and perceptions of various teaching styles. *Learning and Instruction, 13*, 597–609.
Li, C., & Kam, W. K. (2011). Mosston's Reciprocal Style of Teaching: A Pilot Study in Hong Kong. *New Horizons in Education, 59*(2), 27–37.
Morgan, K., Kingston, K., & Sproule, J. (2005). Effects of different teaching styles on the teachers behaviours that influence motivational climate and pupils' motivation in physical education. *European Physical Education Review, 11*, 257–285.
Mosston, M., & Ashworth, S. (2002). *Teaching physical education* (5th edition). San Francisco: Benjamin Cummings.
Ommundsen, Y. (2006). Pupils' self-regulation in physical education: The role of motivational climates and differential achievement goals. *European Physical Educational Review, 12*, 289–315.
Papaioannou, A., Milosis, D., Kosmidou, E., & Tsigilis, N. (2007). Motivational climate and achievement goals at the situational level of generality. *Journal of Applied Sport Psychology, 19*, 38–66. doi:10.1080/10413200601113778
Papaioannou, A., Theodosiou, A., Pashali, M., & Digelidis, N. (2012). Advancing task involvement, intrinsic motivation and metacognitive regulation in physical education classes: The self-check style of teaching makes a difference. *Advances in Physical Education, 2*, 110.
Patmanoglou, S., Digelidis, N., Mantis, K., Papapetrou, L., & Mavidis, A. (2007). The impact of the command and self-check teaching styles in goal orientations, perceived motivational climate and perceived athletic ability in the elementary. *Inquiries in Sport & Physical Education, 5*(2), 199–206.
Perkos, S. (2003). Self-talk in basketball skills learning. Unpublished doctoral dissertation. University of Thessaly.

Pitsi, A., Digelidis, N., & Papaioannou, A. (2015). The effects of reciprocal and self-check teaching styles in students' intrinsic-extrinsic motivation, enjoyment and autonomy in teaching traditional Greek dances. *Journal of Physical Education and Sport, 15*(2), 352.
Rigby, C. S., Deci, E. L., Patrick, B. C., & Ryan, R. M. (1992). Beyond the intrinsic and extrinsic dichotomy: Self-determination in motivation and learning. *Motivation and Emotion, 16*, 165–185.
Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*, 749–761.
Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary educational psychology, 25*, 54–67.
Stubbs, H. C. (1968). An exploratory study in girls' basketball relative to the measurement of the basketball handling ability. In H. Barrow & R. McGee (Eds.), *A practical approach to measurement in physical education* (pp. 233–235). London, Kimpton.
Weinberg, R. S., Fowler, C., Jackson, A., Bangall, J., & Bruya, L. (1991). Effect of goal difficulty on motor performance: A replication across tasks and subjects. *Journal of Sport & Exercise Psychology, 13*, 160–173.
White, S. A., Kavussanu, M., & Guest, S. M. (1998). Goal orientations and perceived of the motivational climate created by significant others. *European Journal of Physical Education, 3*, 212–228.
Williams, L. (1998). Contextual influences and goal perspectives among female youth sport participants. *Research Quarterly for Exercise and Sport*, 65, 47–57.
Zeng, H. Z., Leung, R. W., Lin, W., & Bian, W. (2009). Learning outcomes taught by three teaching styles in college fundamental volleyball classes. *Clinical Kinesiology 63*, 1–6.
Zimmerman, B. J., & Kitsantas, A. (1997). Developmental phases in self-regulation: Shifting from process goals to outcome goals. *Journal of Educational Psychology, 89*, 29–36.

Sport International

Physical activity and enjoyment during dance-focused physical education classes in middle school girls

J. P. Ambegaonkar, C. Pierce, N. Cortes, R. Mattinen & S. Caswell (Manassas, USA)

Abstract

Introduction: Almost 1/3 of children are overweight or obese. School-age children should participate in 60 minutes of daily moderate-vigorous physical activity (MVPA;