



## Flow Experiences in Physical Education Classes: The Role of Perceived Motivational Climate and Situational Motivation

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### Abstract

The purpose of this study was to determine the role of perceived motivational climate and situational motivation levels on dispositional flow in physical education classes. 242 boys ( $M_{age}=13.38$ ;  $SD=0.95$ ) and 251 girls ( $M_{age}=13.27$ ;  $SD=0.88$ ) a total of 493 secondary school students ( $M_{age}=13.32$ ;  $SD=0.91$ ) voluntarily participated in this study. Physical Education Situational Motivational Scale, Learning and Performance Orientation in Physical Education Classes Questionnaire and Physical Education Dispositional Flow Scale-2 were administered to all participants. Hierarchical regression analysis indicated that identified regulation, intrinsic motivation, pupil learning climate and teacher-initiated learning explained a significant amount of variance in dispositional flow in physical education ( $p<0.05$ ). The pupil learning climate, identified regulation and leisure time sport participation were the strongest predictors, respectively. These findings suggested that promoting mastery-oriented climate, self-determined situational motivation, and participation in sport will foster dispositional flow in the physical education setting.

**Keywords:** Dispositional flow, Situational motivation, Motivational climate, Physical education.

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## 1. Introduction

School physical education (PE) has been recognized as one of the most important contexts for obtaining lifelong physical activity habits in youth (Koka and Hagger, 2010). It has been argued that sport, physical activity, and PE have some potential benefits for young people, such as developing physical skills, building character, fostering life skills, encouraging sportsmanship, enhancing teamwork skills, and preparing young people for adult life (Pate, 1983; Goldstein and Iso-Ahola, 2006; Telema *et al.*, 2006; Massarella and Winterstein, 2009; Bernstein *et al.*, 2011; Leech and Marston, 2016).

It is accepted that school physical education is likely to play a critical role in encouraging pupils' participation in the regular physical activity, (Biddle and Chatzisarantis, 1999; Bakirtzoglou and Ioannou, 2011). Pupils who feel motivated toward PE are more likely to gain exercise habits for lifelong (Adams II and Brynteson, 1992). As stated by Pharez (2016) positive experiences in physical education classes can be an essential step toward a more active and healthy lifestyle for all pupils and also a key factor to further participation in other sports activities. Another important key factor is the physical education teacher. Accordingly, creating a positive experience should be the most important duty for PE teachers (Cherubini, 2009; Pharez, 2016; Rukavina and Doolittle, 2016). Moreover, positive climates help to emerge the adaptive outcomes, such as enjoyment and happiness (Ntoumanis, 2001). In positive psychology, there is also a fundamental construct called as flow. Theoretically, this concept accepts the importance of positive experiences. The flow concept was initially introduced by Csikszentmihalyi (1975) and applied in the sport and physical activity contexts by Jackson (1996) and Jackson and Marsh (1996). Optimal experience or flow typically occurs when a person perceives a balance between the challenges associated with a situation and his or her capabilities to accomplish or meet these demands (Csikszentmihalyi, 1990).

It is also very important to know which factors effect flow experience. Swann *et al.* (2012) have summarized the factors to be the facilitator and inhibitor related to flow in their systematic review study. Some facilitating factors are optimal motivation, optimal arousal, positive thoughts and emotions, and positive feedback whilst the preventing factors have been identified as lacking motivation, lacking confidence, negative feedback, negative thoughts and emotions and poor performance. The factors that inhibit and facilitate the flow are still unclear (Kawabata and Mallett, 2016). This situation is also still unclear in physical education settings.

In addition to these factors, the perceived motivational climate is known as one of the contextual elements that facilitate or inhibit the flow (Kowal and Fortier, 2000; Moreno-Murcia *et al.*, 2008a). The motivational climate has been proposed to have two dimensions called as learning-involving climate (task-involving) and performance-involving climate (ego-involving) (Nicholls, 1989; Ames, 1992; Duda, 2001; Xiang *et al.*, 2004; Jaakkola *et al.*, 2016). While learning-involving climate focuses on task mastery, learning, effort exertion and self-improvement (Ames, 1992; Newton *et al.*, 2000) performance-involving climate emphasizes performance outcomes and social comparison between the pupils. However, a performance involving climate leads to increased external motivation and anxiety as well as decreased interest and enjoyment (Duda and Whitehead, 1998). Research which carried out in the field of physical education has shown that task-involving and ego-involving climate are positively related to flow (Papaioannou and Kouli, 1999; Kowal and Fortier, 2000; Cervello *et al.*, 2007; Sicilia *et al.*, 2008; Moreno-Murcia *et al.*, 2008a). Thus, it seems necessary to create a motivational climate that promotes intrinsic motivation, which, in turn, may foster flow. Papaioannou and Kouli (1999) found that pupils' task orientation and perceptions of a task-involving motivational climate predicted higher levels of concentration, a more autotelic experience and an absence of self-consciousness. More recent research in physical education settings (Bakirtzoglou and Ioannou, 2011) revealed that both task-involving and ego-involving motivational climates were significantly and positively related to pupils' dispositional flow. Another research has shown that motivation, motivational climate and flow state (flow experience) are interrelated (Kowal and Fortier, 1999; Papaioannou and Kouli, 1999; Moreno-Murcia *et al.*, 2008a; González-Cutre *et al.*, 2009). More specifically, previous studies have shown positive associations between flow state and intrinsic motivation (Deci and Ryan, 1985; Kowal and Fortier, 1999; Camacho *et al.*, 2008).

Conversely, there is a criticism about the relationship between flow and self-determined motivation. Kawabata and Mallett (2016) have stated that full concentration is sufficient for experiencing flow, and people are likely enjoy any activity as long as they entirely concentrate on the activity, regardless of whether they are motivated intrinsically or extrinsically. On the other hand, people need to experience the activity as autonomous to foster intrinsic or self-determined motivation for doing the activity. However, autonomy is not represented as an element in flow theory. Therefore, it is said that motivation type might change, regardless of whether motivation type is needed for experiencing flow. So, the current study also tries to find out the role of situational motivation as well as the perceived motivational climate on flow experiences in the PE context. That is why the relationship between perceived motivational climate, motivation and flow can be further importance, because intrinsic motivation depends on motivational climate that promotes positive outcomes (e.g., Scott *et al.* (2003)). Intrinsic motivation also can help to find out the flow concept (Deci and Ryan, 1985; Camacho *et al.*, 2008).

Due to all the mentioned reasons, the facilitation of pupils' flow experiences in physical education seems very important, because it can help to enhance a pupil's enjoyment at physical education, as well as motivate participation in physical activity voluntarily during adolescence and later on in life. In the light of these reasons, *flow concept* can be helpful to teachers, pupils, and the other related persons. Moreover, flow experiences in physical education lessons as an optimal psychological state may be the first factor that affects situations in PE such as pupils' participation and perceived motivational climate. Nevertheless, it is not clear whether motivation level and perceptions of motivational climate influence optimal experience (flow) in secondary school pupils. To extend previous research, the present study aimed to analyze the role of perceived motivational climate and situational motivation on dispositional flow in physical education classes. Therefore, we hypothesized that motivational climate and situational motivation could be the predictor for dispositional flow in physical education settings.

As far as our knowledge, no previous studies on the issues mentioned in this study were examined in Turkey. When the literature is examined, any study had carried out with the same measurement tools and sample group. Additionally, there was no study in the literature about the interaction effect with regard to similar variables. For this reason, the findings obtained from this study can be interesting in comparison to other studies' findings in the literature. However, the previous studies (Kowal and Fortier, 1999; Papaioannou and Kouli, 1999; Moreno-Murcia

*et al.*, 2008b; González-Cutre *et al.*, 2009) have used the older students, nonstudents or athletes, which is unlike the present study. In this context, the secondary school pupils in Turkey have been seen worthy of investigation, regarding participation motivation, perceived motivational climate and dispositional flow.

## 2. Methodology

### 2.1. Participants

The participants were recruited from secondary schools in three regions of Izmir city of Turkey. The schools were selected randomly. Two hundred forty two boys ( $M_{age}=13.38$ ;  $SD=0.95$ ) and 251 girls ( $M_{age}=13.27$ ;  $SD=0.88$ ) totally 493 ( $M_{age}=13.32$ ;  $SD=0.91$ ) secondary school students voluntarily participated in this study. The students were also recruited randomly in each grade level. It was determined that 192 boys and 136 girls participated in sports activities in their leisure time, though 50 boys and 115 girls did not participate in sports activities in their leisure time.

## 3. Measures

### 3.1. The Situational Motivation Scale for Physical Education

The Situational Motivation Scale (SIMS; Guay *et al.* (2000)) was used to assess individuals' situational (or state) motivation. It has four subscales and four-item subscales that measure intrinsic motivation (IM), identified regulation (IR), external regulation (ER) and amotivation (A). Responding to stem, "Why are you currently engaged in physical education?" participants rate their reasons for participating in physical education class. A 7-point Likert type scale (1=strongly disagree, 7=strongly agree) was used to rate the importance of each of the 16 items. The validity and reliability study for physical education lesson were carried out by Daşdan *et al.* (2012a). The confirmatory factor analysis provided good support for construct validity ( $\chi^2/df=2.62$ ,  $RMSEA=0.06$ ,  $NFI=0.94$ ,  $NNFI=0.96$ ,  $CFI=0.97$ ,  $GFI=0.93$  and  $AGFI=0.89$ ). The internal consistencies of subscales were 0.71 for intrinsic motivation, 0.72 for identified regulation, 0.79 for external regulation and 0.78 for amotivation (Daşdan *et al.*, 2012a).

### 3.2. Learning and Performance Orientations in PE Classes Questionnaire (LAPOPECQ)

The original 26-item LAPOPECQ (Papaioannou, 1994) was administered to measure pupils' perception of achievement orientations in PE classes. The measurement tool had a hierarchical model with five first-order factors and two second-order factors (for review, see Papaioannou (1994)). The scale consists of five subscales: the pupil learning orientation (7 items), the teacher initiated learning orientation (5 items), the pupil competitive orientation (5 items), the pupils' worry about mistakes (5 items), and the outcome orientation without effort (4 items). Each item which is following the stem "During today's PE lesson..." was placed on a 5-point Likert-type scale anchored by 1 (strongly disagree) and 5 (strongly agree). The validity and reliability of the scale for the physical education lesson was conducted by Daşdan *et al.* (2012b). Researchers reported that the results of CFA confirmed the five factors structure. ( $\chi^2/df=2.35$ ,  $RMSEA=0.05$ ,  $NNFI=0.98$ ,  $NFI=0.92$ ,  $CFI=0.98$  and  $AGFI=0.86$ ). In their study, it has reported that internal consistency values were for subscales 0.88 for pupils' learning, 0.68 for teacher-initiated learning, 0.67 for pupil competitive orientation, 0.72 for pupil worry and 0.50 for outcome orientation without effort.

### 3.3. Dispositional Flow State-2 for Physical Education

Dispositional Flow State-2 which consists of 36 items is used to measure the dispositional optimal experience level in a particular activity. Participants responded to the items on a 5-point Likert type scale ranging from 1 (never) to 5 (always). The DFS-2 has nine subscales (i.e., challenge-skills balance, action-awareness merging, clear goals, unambiguous feedback, concentration on the task at hand, sense of control, loss of self-consciousness, the transformation of time, and autotelic experience) (Jackson and Eklund, 2002). The Dispositional Flow Scale-2 for physical education lesson (DFS-2 for PE) which adapted to Turkish by Daşdan *et al.* (2012c) was used in this study. In this study, the results of confirmatory factor analysis revealed good fit index values ( $\chi^2/df = 863.11/558 = 1.55$ ,  $RMSEA = 0.043$ ,  $NNFI = 0.96$ ,  $CFI = 0.97$ ). Also, it has reported that the internal consistency values were ranged from 0.46 (challenge-skill balance) to 0.79 (loss of self-consciousness) (Daşdan *et al.*, 2012c). The total scale score was used in this study.

### 3.4. Demographic Information

Participants were asked to provide demographic information for research purpose only (student's age, sex, grade, school name, leisure time sport activity information-where, when, how long and how often). Personal information form did not contain any identity details about students in order that they can give friendly and correct answers.

## 4. Data Analysis

Hierarchical multiple regression analysis (enter method) was used to determine the role of sex, leisure time sport participation, perceived motivational climate and situational motivation on dispositional flow. The model included three steps: (a) sex and leisure time sport participation; (b) subscales of situational motivation and (c) perceived motivational climate subscales. Hierarchical Multiple Regressions assume that there is little or no multicollinearity in the data. Multi-collinearity occurs when the independent variables are not independent from each other (source/reference). Therefore, multi-collinearity was checked in terms of these keys such as adequate sample size, multiple linear correlations (Tolerance and VIF), singularity, the extreme values and normal distribution (Seçer, 2015) criteria.

If the tolerance value is less than 10 and the value of the variance inflation factor is over 10; it means that there is a high relationship between independent variables (Dormann *et al.*, 2013). The results of the analysis showed that

the tolerance values of all independent variables were between 0.43 and 0.93, and also variance inflation factor values were between 1.08 and 2.33. Namely, these findings have indicated that there is no statistically significant relationship between the prediction values.

#### 4.1. Data Collection

All the required institutional and school approvals were obtained before the start of the study. All potential participants were informed about of the current study, and necessary explanations for the filling of the scales were given by the first researcher. Personal information form and three scales were used in this study. The questionnaires took approximately 25 minutes to complete.

### 5. Results

#### 5.1. Descriptive Results

Means and standard deviations of the study variables with regard to sex and leisure time sport participation are presented in Table 1.

Table-1. Means of All Scales With Regard to Sex and Leisure Time Sport Participation

		Sex	Sport participation	M	SD
Situational Motivation subscales	Intrinsic motivation	Boy	Yes	6.03	0.87
			No	5.40	1.03
		Girl	Yes	5.74	1.08
			No	5.64	1.03
	Identified regulation	Boy	Yes	5.85	1.09
			No	5.20	1.20
		Girl	Yes	5.49	1.21
			No	5.16	1.24
	External regulation	Boy	Yes	3.11	1.51
			No	3.55	1.58
		Girl	Yes	2.83	1.42
			No	3.65	1.64
Amotivation	Boy	Yes	2.52	1.50	
		No	2.81	1.41	
	Girl	Yes	1.93	1.41	
		No	2.58	1.49	
Perceived motivational climate subscales	Pupils' learning	Boy	Yes	3.96	0.92
			No	3.64	0.88
		Girl	Yes	4.22	0.77
			No	3.98	0.84
	Outcome orientation without effort	Boy	Yes	3.20	0.96
			No	3.03	0.86
		Girl	Yes	3.15	0.83
			No	3.14	0.91
	Pupil worry	Boy	Yes	3.24	0.92
			No	2.93	0.84
		Girl	Yes	3.29	0.90
			No	3.44	1.00
	Pupil competitive orientation	Boy	Yes	3.45	0.89
			No	3.22	0.87
		Girl	Yes	3.45	0.80
			No	3.34	0.84
	Teacher initiated learning	Boy	Yes	3.88	0.92
			No	3.66	0.93
		Girl	Yes	4.08	0.84
			No	3.83	0.90
	Dispositional Flow	Boy	Yes	3.95	0.67
			No	3.48	0.66
		Girl	Yes	3.94	0.54
			No	3.62	0.68

#### 5.2. Main Analyses

The results of hierarchical multiple regression analysis to determine the role of motivational climate, situational motivation, on dispositional flow is presented in Table 2.

Sex and leisure time sport participation had been included as control variables in the analyses. Hierarchical multiple regression analysis results indicated that sex did not predict dispositional flow. On the other hand, leisure time sport participation significantly and negatively predicted dispositional flow. As shown in Table 2, sex was not correlated with the dispositional flow ( $\beta=0.028$ ,  $p>0.05$ ), while leisure time sport participation was negatively correlated with the dispositional flow ( $\beta= -0.271$ ,  $p<0.05$ ). Leisure time sport participation explained 7% of the variance of dispositional flow in the first stage. As shown in Table 2, intrinsic motivation and identified regulation were positively correlated with dispositional flow ( $\beta=0.145$ ,  $p<0.05$ ;  $\beta=0.254$ ,  $p<0.05$ , respectively), while leisure time sport participation and amotivation were negatively correlated with dispositional flow ( $\beta=-0.186$ ,  $p<0.05$ ;  $\beta=-0.151$ ,  $p<0.05$ , respectively). Leisure time sport participation, intrinsic motivation, identified regulation and amotivation explained % 25 of the variance in the second stage.

**Table-2.** The Results of Hierarchical Multiple Regression Analysis to Determine The Role of Motivational Climate, Situational Motivation on Dispositional Flow.

	<i>Model 1</i>				<i>Model 2</i>				<i>Model 3</i>			
	<i>B</i>	<i>t</i>	$\beta$	<i>p</i>	<i>B</i>	<i>t</i>	$\beta$	<i>p</i>	<i>B</i>	<i>t</i>	$\beta$	<i>p</i>
<i>S</i>	0.04	0.61	0.03		0.06	0.99	0.04	0.33	-0.04	-0.74	-0.03	0.46
<i>LTSP</i>	-0.38	-5.99	-0.27	0.000	-0.26	-4.32	-0.19	0.000	-0.22	-4.06	-0.16	0.000
<i>IM</i>					0.09	3.07	0.15	0.002	0.08	2.86	0.12	0.004
<i>IR</i>					0.14	5.24	0.25	0.000	0.08	3.07	0.14	0.002
<i>ER</i>					0.01	0.58	0.03	0.58	0.01	0.79	0.03	0.43
<i>A</i>					-0.07	-3.24	-0.15	0.001	-0.03	-1.79	-0.08	0.07
<i>PLO</i>									0.25	6.12	0.33	0.000
<i>OOWE</i>									0.02	0.52	0.02	0.61
<i>PW</i>									-0.00	-0.02	-0.00	0.98
<i>PCO</i>									0.02	0.52	0.02	0.60
<i>TIL</i>									0.09	2.42	0.13	0.02
<i>R</i>	0.27				0.48				0.63			
<i>R2</i>	0.07				0.32				0.39			
<i>F</i>	18.461 (2;490)				24.688 (4;486)				25.931 (5; 481)			
<i>p</i>	0.00				0.00				0.00			

S = Sex, LTSP = Leisure Time Sport Participation, IM = Intrinsic Motivation, IR = Identified Regulation, ER = External regulation, A = Amotivation, PLO = Pupil Learning Orientation, OOWE = Outcome orientation without effort, PW = Pupil worry, PCO = Pupil Competition Orientation, TIL = Teacher initiated learning

In the last model, intrinsic motivation, identified regulation, pupil learning orientation and teacher initiated learning were positively correlated with dispositional flow ( $\beta=0.121$ ,  $p<0.05$ ;  $\beta=0.137$ ,  $p<0.05$ ;  $\beta=0.332$ ,  $p<0.05$ ;  $\beta=0.125$ ,  $p<0.05$ , respectively), while leisure time sport participation was correlated negatively with dispositional flow ( $\beta=-0.156$ ,  $p<0.05$ ). Leisure time sport participation, intrinsic motivation, identified regulation, pupil learning orientation and teacher initiated learning explained 7% of the variance.

Regarding the predictive power of each predictor variable on dispositional flow, the results explained that pupil learning climate, identified regulation and leisure time sport participation emerged as the strongest predictors. Pupil learning climate and identified regulation were positively and the stronger predictors while leisure time sport participation was negatively and the stronger predictor.

## 6. Discussion

This study aimed to examine the role of perceived motivational climate and situational motivation on dispositional flow. Regression analysis demonstrated that the situational motivation and perceived motivational climate were positive predictors of flow. The meaning of this finding is that flow can emerge if a positive atmosphere can be created during the lesson, such as a more self-determined and supportive climate. On the other hand, it is understood that these positive outcomes are facilitators for experiencing flow. Previous studies had also shown that an individual who is intrinsically motivated should be more prepared to experience flow because she will be interested in the task at hand (Deci and Ryan, 1985; Camacho *et al.*, 2008). With regard to the positive relationship between situational motivation and flow, the majority of the empirical evidence supports SDT and collaboratively suggests more self-determined motivational types, such as intrinsic motivation, will have more positive consequences than the others (Jackson-Kersey and Spray, 2013). Intrinsic motivation has become a facilitator for getting other positive outputs (Ryan and Deci, 2000). There are supportive studies (e.g., (Fullagar and Mills, 2008; Stavrou, 2008)) in the literature about self-determined motivation predicts as positively to flow state. Kowal and Fortier (2000) have found that self-determined motivation were positive predictors of dispositional flow. A study conducted by Fullagar and Mills (2008) found that amotivation in physical education negatively predicted the sense of control and autotelic experience. It means that if a pupil has amotivation, it is not expected to enter the flow channel from her/him (Fullagar and Mills, 2008).

As consistent with the hypothesis of the study, it was found that learning climate (mastery involving) facilitate flow situation. This result has supported the literature. As stated previously, teacher-initiated learning refers to mastery involving climate. Research in PE (e.g., (Papaioannou, 1995; Solomon, 1996; Treasure, 1997; Carpenter and Morgan, 1999; Christodoulidis *et al.*, 2001)) has revealed that perceptions of a mastery climate relate to more positive attitude toward Moreno-Murcia *et al.* (2008b) have also shown that mastery involved climate in physical education provides a positive and significant prediction of dispositional flow. The researchers showed that mastery involving dimensions were stronger predictors than performance involving dimensions. In this sense, the findings obtained from this study seem to be consistent with the literature. It is understood that If the teachers want to promote dispositional flow in their lesson, the teachers should create a mastery involving climate.

As a result, sport related behaviors can facilitate dispositional flow state. Therefore, children should be encouraged to take participate in sport, and its benefits should be told to every related person (children, families, teachers, and administrations). Some important interventions, such as diversity in the learning environment, to prepare a correct lesson plan according to interest and need, to get pupils involved in the decision-making process, and to change the activity difficulty level according to the main purpose of the course, can be helpful in getting more pleasure, establishing positive outputs and experiencing flow as well. In order to reach these all, the class environment might also be reorganized more effectively and efficiently.

The present findings need to be considered in light of several limitations. First, the findings are based entirely on data from secondary school students, and the data was not collected from other grades as well as teachers. Comparative studies would be necessary for this study. Secondly, the design was correlational, and results could not be interpreted causally. In the future, longitudinal research designs or case studies should be used to understand factors that affect the motivation of students in physical education settings. Future studies can replicate this study on different samples and include both students and teachers by using the different approaches.

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