

# Motivation in physical education classes: A self-determination theory perspective

Ntoumanis, Nikolaos; Standage, M

DOI:

[10.1177/1477878509104324](https://doi.org/10.1177/1477878509104324)

*Citation for published version (Harvard):*

Ntoumanis, N & Standage, M 2009, 'Motivation in physical education classes: A self-determination theory perspective', *Theory and Research in Education*, vol. 7, no. 2, pp. 194-202.  
<https://doi.org/10.1177/1477878509104324>

[Link to publication on Research at Birmingham portal](#)

## General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

## Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact [UBIRA@lists.bham.ac.uk](mailto:UBIRA@lists.bham.ac.uk) providing details and we will remove access to the work immediately and investigate.

Running head: MOTIVATION IN PHYSICAL EDUCATION

Motivation in Physical Education Classes: A Self-Determination Theory Perspective

Nikos Ntoumanis

School of Sport and Exercise Sciences

University of Birmingham, UK

Martyn Standage

School for Health

University of Bath, UK

Address for correspondence:

Dr. Nikos Ntoumanis  
School of Sport and Exercise Sciences  
University of Birmingham  
Birmingham  
B15 2TT  
UK

Tel: + 44 (0) 121 4147981

Fax: +44 (0) 121 4144121

E-mail: N.Ntoumanis@bham.ac.uk

Manuscript Submitted:

## Abstract

This paper presents a brief overview of empirical studies in school physical education (PE) that have employed SDT and, where relevant, proposes ideas for future research in this area. First, we review research on teachers' interpersonal style and its relation to students' motivation. Second, we discuss intervention studies aimed at optimizing teachers' interactions with students. Third, we present an overview of findings suggesting that basic psychological needs and motivational regulations predict various cognitive, affective, and behavioral outcomes in PE. Finally, we provide practical recommendations for PE teachers drawing from initial intervention studies in PE.

**Keywords:** physical education, physical activity, teacher motivational strategies

A burgeoning body of evidence supports the preventative role that physical activity has for noncommunicable diseases such as obesity, diabetes mellitus, cardiovascular disease, and certain forms of cancer (Department of Health, 2004). Commensurate with such findings, the past decade has witnessed a resurgent research interest in understanding the motivational processes underlying behavior and psychological well-being in school physical education (PE) classes. An impetus for this research has been the widely-acknowledged finding that the physical activity levels of young people in industrialized countries are currently below levels considered sufficient to promote the aforementioned health benefits (Cavill, Biddle, & Sallis, 2001). In response to this evidence, national organizations (e.g., the Centers for Disease Control and Prevention; CDC, 1997) have recommended that PE classes play a more central role in increasing physical activity levels among young people, as these classes contain nearly all members of an age cohort. As the physical ability, interest levels, and the effortful investment of students within PE classes can be quite discrepant, understanding the motivational issues undergirding participation in this setting is particularly interesting to researchers and practitioners alike.

Self-determination theory (SDT; Deci & Ryan, 2000) is one of the most widely-used theoretical frameworks to study motivation in PE, which is not surprising given that its major propositions and constructs are highly relevant to PE. The purpose of this paper is to (1) present several studies conducted in PE classes examining teachers' interpersonal style and its relation to students' motivation, (2) demonstrate how basic psychological needs and motivational regulations predict various important outcomes in PE classes and physical activity levels more generally, and (3) discuss some practical implications stemming from initial intervention studies in PE.

*PE Teachers' Interpersonal Style and Students' Motivation*

As in more traditional classroom settings (e.g., Reeve, Jang, Carrell, Jeon, & Barsh, 2004), teachers' interpersonal style has been shown to be influential in PE. One line of research has examined the antecedents of three broad teacher behaviors, namely provision of autonomy support, structure (i.e., clear expectations and guidelines), and involvement (i.e., personal interest in students). Recently, Taylor, Ntoumanis, and Smith (2008) interviewed 22 British PE teachers to identify job-related influences on teachers' choice of motivational strategies. The teachers reported that an emphasis on student assessment, their own performance evaluations, pressures to conform to other teachers' methods, perceived cultural norms, and time constraints associated with PE lessons influenced their choice of motivational strategies. Taylor, Ntoumanis, and Standage (2008) conducted a follow-up study examining other determinants (besides job-related pressures) of teachers' choice of motivational strategies. The authors surveyed 204 British PE teachers from 82 different schools throughout the UK, and found support for the following structural equation model: teachers' reports of job-related pressures negatively predicted teachers' psychological need satisfaction, whereas perceptions of students' autonomous motivation and teachers' autonomous causality orientation positively predicted teachers' psychological need satisfaction. Teachers' psychological need satisfaction positively predicted teachers' autonomous motivation, and both positively predicted teachers' use of three specific autonomy-supportive motivational strategies (viz., providing a meaningful rationale, providing instrumental help and support, and gaining an understanding of the students). These findings suggest that when teachers perceive students to be low in autonomous motivation, they may interact with them using a less autonomy-supportive style.

An important question concerns how teachers' choice of motivational strategies affects students' motivation in PE. Taylor and Ntoumanis (2007) examined this question using a sample of 787 British PE students taught by 51 PE teachers. Multilevel modeling analyses showed that

students' perceptions of teachers' use of autonomy support, structure, and involvement positively predicted their own autonomous motivation in PE, as mediated by satisfaction of autonomy and competence. Notably, teachers' reports of their use of the three motivational strategies, relative to students' reports, were not as strongly related to students' need satisfaction and autonomous motivation. This study also reported some interesting perceptual discrepancies between teachers and students. First, PE teachers' perceptions of students' motivation related only moderately to students' own reports of their motivation, which is somewhat alarming given that teachers' perceptions of students' motivation have been shown to be related to teachers' use of autonomy-supportive motivational strategies (Taylor, Ntoumanis, & Smith, 2008). Second, the associations between PE teachers' and students' reports of autonomy support, structure, and involvement were of small-to-moderate magnitude, which may be explained by teachers' social desirability bias, teaching experience, and/or experience within a particular class. Thus, more objective measures (e.g., independent observers) of the teaching environment might be useful in evaluating the plausibility of teachers' reports.

To this effect, Tessier, Sarrazin, and Ntoumanis (in press) presented an observational grid including 15 categories (e.g., criticism, perspective-talking statements, negative communications) of teachers' verbal interactions with students. These categories were rated by two trained researchers (who were unaware of the purposes of the study) for frequency and the degree to which they are autonomy-supportive, controlling, or neutral (i.e., neither autonomy-supportive nor controlling, such as technical instructions). Using a sample of five French PE teachers and 96 students, the researchers reported good inter-rater and intra-rater reliabilities for all categories. This observational grid can be particularly useful in cases where there are large discrepancies between teachers' and students' perceptions of teachers' interpersonal style.

Another contribution of the work by Tessier et al. (in press) is that they assessed the controlling aspect of PE teachers' interpersonal style, which has been largely neglected in PE research. However, additional dimensions of this style (e.g., forced compliance) should be assessed in future research.

### *SDT-Based Intervention Studies in PE*

Intervention studies that manipulate the PE teachers' interpersonal style are rare. Tessier et al. (in press) tested the effects of an autonomy-supportive training program [inspired by Reeve et al.'s (2004) work in the classroom] on overt teaching behaviors among French PE teachers. In the experimental group, teachers were educated on the benefits of an autonomy-supportive style, followed an individualized-guidance program during eight lessons of a teaching cycle, and their behaviors were observed and rated using the aforementioned observational grid. Results indicated that teachers in the experimental group, relative to those in the control group, used more autonomy-supportive and neutral behaviors, but no differences emerged concerning the use of controlling behaviors.

A large-scale intervention was reported by Chatzisarantis and Hagger (in press), which used a cluster-randomized design targeting 215 British students from 10 schools over a period of five weeks. The two conditions used in this study (viz., autonomy supportive versus neutral) differed as a function of whether teachers offered students enhanced choice and acknowledged students' difficulties. Results indicated that students in the autonomy-supportive condition reported stronger intentions to exercise during leisure time and participated more frequently in leisure-time physical activities, compared to students in the neutral condition. Although these intervention studies are promising, truly-randomized interventions on a larger scale are needed that also manipulate other adaptive facets of the teaching environment (i.e., structure and

involvement) and obtain long-term follow-up data to provide stronger evidence for the feasibility, fidelity, and effectiveness of SDT-based interventions. Further, in addition to teachers' motivational style, peer influences could also be assessed in PE settings.

A study by Vansteenkiste, Simons, Soenens, and Lens (2004), although it did not attempt to manipulate PE teachers' interpersonal style, is informative because it demonstrates some of the consequences of framing PE activities as useful toward intrinsic (i.e., physical health and fitness), as opposed to extrinsic (i.e., appearance and attractiveness) goal attainment. In this study, 501 Belgian PE students were given instructions by the experimenters that framed the activity as useful for either intrinsic or extrinsic goal attainment. Results showed that the induction of future intrinsic goal attainment had a positive effect on effort, autonomous motivation, performance, and persistence. In contrast, the induction of future extrinsic goal attainment had a negative effect on those outcomes, compared to a control condition in which no future goals were given. These results have implications for PE teachers who should emphasize to their students intrinsic, as opposed to extrinsic, goals that could be attained via active participation in PE classes. Further, it should be noted that Vansteenkiste et al. aimed to consciously alter students' motivation by administering different instructions. However, social psychological research indicates that subconscious influences are also instrumental in shaping behavior (e.g., Chartrand & Bargh, 2002), and future research could examine whether priming procedures activate autonomous and controlled situational motivation in PE settings.

#### *Basic Psychological Needs, Motivational Regulations, and Related Consequences*

Aligned with SDT's premise that satisfaction of the basic psychological needs for autonomy, competence, and relatedness facilitates internalization, psychological growth, and well-being (cf. Niemiec & Ryan, this volume), research has examined the relation of



psychological need satisfaction to students' autonomous motivation and other important outcomes in PE. Examining the three needs independently (e.g., Standage, Duda, & Ntoumanis 2003) and as a composite measure (e.g., Ntoumanis, 2005), many studies have supported the veracity of the basic psychological needs approach (see Standage, Gillison, & Treasure, 2007, for an overview). For example, Standage et al. (2005) found that perceptions of need satisfaction directly predict autonomous motivation and indirectly predict positive PE-related outcomes (viz., students' concentration, preference for challenging tasks, and positive affect in PE classes). Similarly, and using a prospective design, Ntoumanis (2005) found that students who reported high satisfaction of autonomy, competence, and relatedness in PE were more likely to participate in optional PE classes during the subsequent school year. Together, results suggest that psychological need satisfaction has (1) direct, positive relations to autonomous motivation and well-internalized extrinsic motivation, and (2) indirect, positive relations to psychological well-being, adaptive cognitive responses, behavioral persistence, and behavioral intentions (e.g., Ntoumanis, 2005; Standage, Duda, & Ntoumanis, 2003, 2005).

Although there are numerous areas that future research may take on the basic psychological needs (e.g., diary studies), perhaps the most pressing area of research is on the development of context-specific measures of psychological need satisfaction (as well as need thwarting) in PE classes. As Standage et al. (2007) pointed out, it would be prudent for such work to include PE students at all stages of questionnaire development (e.g., focus groups, item development, item meaning) to ensure that the various ways autonomy, competence, and relatedness are manifested in PE classes are captured.

Research in PE has also explored the distinction between autonomous and controlled motivation distinction, and intrinsic motivation and identified regulation have been consistently

associated with adaptive consequences. For example, research has shown that autonomous motivation predicts high levels of reported vitality (Mouratidis, Vansteenkiste, Lens, & Sideridis, 2008), positive affect (Standage et al., 2005), interest (Goudas, Biddle, & Fox, 1994), self-esteem (Standage & Gillison, 2007), health-related quality of life (Standage & Gillison, 2007), concentration (Ntoumanis, 2005), effort (Ntoumanis, 2001), a preference for attempting challenging tasks (Standage et al., 2005), behavioral persistence (Ntoumanis, 2005), objective achievement/performance (Boiché, Sarrazin, Grouzet, Pelletier, & Chanal, 2008), and students' intentions to be physically active during leisure-time (Hagger et al., 2003; Standage et al., 2003). Further, students' autonomous motivation has been shown to positively predict teachers' ratings of students' effort and persistence in PE (Ferrer & Caja-Weiss, 2000; Standage et al., 2006). Finally, Ntoumanis (2005) found that students who enrolled in optional PE classes reported higher autonomous motivation and lower amotivation than those who chose not to participate.

In contrast to the positive outcomes associated with autonomous motivation, controlled motivation (i.e., external and introjected regulation) and amotivation have been associated with students' boredom and unhappiness (Mouratidis et al., 2008; Ntoumanis, 2001; Standage et al., 2005). Further, an inverse association has emerged between amotivation in PE and students' intentions to be physically active during leisure-time (Standage et al., 2003).

Given that PE has been advanced as a vehicle to promote physical activity levels, we believe that future field-based research should examine how one's motivation for PE predicts objectively-assessed patterns of physical activity, both in PE classes and during students' leisure-time. To this end, it is now possible to estimate energy expenditure above rest using synchronized accelerometry and heart-rate data, which provides researchers an excellent estimate of physical activity and/or exercise behavior in free-living conditions (Brage, Brage, Franks,

Ekelund, & Wareham, 2005). In recent work using such technology with a college-age sample, Standage, Sebire, and Loney (2008) found that autonomous motivation for exercise positively predicted bouts of moderate-intensity exercise behavior over a 7-day period. The use of this (or similar) technology to assess change in physical activity and/or exercise levels as a function of PE teacher-based interventions aiming to facilitate students' autonomous behavioral enactment and long-term persistence would be an exciting direction for future research (cf., Standage et al., 2007).

### *Conclusion*

The PE-based studies highlighted in this brief overview provide support for various theoretical tenets advanced within SDT. Indeed, the reviewed work corroborates the benefits, both to their own motivation and that of their students, of teachers using interpersonal styles (i.e., autonomy support, structure, involvement) that support students' basic psychological need satisfaction. Extant work has also supported the veracity of the basic needs approach for predicting autonomous motivation and indices of psychological well-being. Similarly, the literature documents the numerous positive cognitive, behavioural, and affective consequences of acting due to autonomous (as opposed to controlled) forms of motivation. It could be argued that one of the most pressing avenues of work within this applied setting has recently begun, with researchers drawing from SDT and related empirical evidence to inform and guide applications and interventions.

### *Practical Implications of Self-Determination Theory in PE*

Intervention studies conducted in PE point to following practical recommendations:

- Because teaching styles have been shown to be malleable, it seems prudent to educate PE teachers about the importance of satisfying students' basic psychological needs (e.g., provide

opportunities for choice and input, empathize with the students' perspective, demonstrate and/or establish peer-learning groups, support cooperation) so that teachers can learn to structure PE classes in motivationally-adaptive ways.

- When a student is not inherently interested in a particular activity, the PE teacher might use the following autonomy-supportive techniques (1) provide a meaningful rationale expressing the importance of partaking in that activity (e.g., health benefits), (2) acknowledge the students' feelings and perspective about the activity, and (3) use language that conveys choice, rather than control (e.g., "you may want to", as opposed to "you have to").

## References

- Boiché, J.C.S., Sarrazin, P.G., Grouzet, F.M.E., Pelletier, L.G., & Chanal, J.P. (2008). Students' motivational profiles and achievement outcomes in physical education: A self-determination perspective. *Journal of Educational Psychology, 100*, 688-710.
- Brage, S., Brage, N., Franks, P. W., Ekelund, U., & Wareham, N. J. (2005). Reliability and validity of the combined heart rate and movement sensor Actiheart. *European Journal of Clinical Nutrition, 59*, 561-570.
- Cavill, N., Biddle, S.J.H., & Sallis, J. F. (2001). Health enhancing physical activity for young people: Statement of the United Kingdom expert consensus conference. *Pediatric Exercise Science, 13*, 12-25.
- Centers for Disease Control and Prevention (1997). Guidelines for school and community programs to promote lifelong physical activity among young people. *Morbidity and Mortality Weekly Report, 46(RR-6)*, 1-36.
- Chartrand, T.L. & Bargh, J.A. (2002). Nonconscious motivations: Their activation, operation, and consequences. In Tesser A., Stapel D., & Wood J., (Eds.), *Self and motivation: Emerging psychological perspectives* (pp. 13-41). Washington, DC: American Psychological Association Press.
- Chatzisarantis, N. L. D., Hagger, M. S. (in press). Effects of an intervention based on self-determination theory on self-reported leisure-time physical activity participation. *Psychology and Health*.
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.
- Department of Health. (2004). *At least five a week: Evidence on the impact of physical activity*

- and its relationship to health. A report from the chief medical officer.* London: Author.
- Ferrer-Caja, E. & Weiss, M. R. (2000). Predictors of intrinsic motivation among adolescent students in physical education. *Research Quarterly for Exercise and Sport*, 71, 267-279.
- Goudas, M., Biddle, S. J. H., & Fox, K. R. (1994). Perceived locus of causality, goal orientations, and perceived competence in school physical education classes. *British Journal of Educational Psychology*, 64, 453-463.
- Hagger, M. S., Chatzisarantis, N., Culverhouse, T., & Biddle, S. J. H. (2003). The processes by which perceived autonomy support in physical education promotes leisure-time physical activity intentions and behavior: A trans-contextual model. *Journal of Educational Psychology*, 95, 784–795.
- Mouratidis, M., Vansteenkiste, M., Lens, W., Sideridis, G. (2008). The motivating role of positive feedback in sport and physical education: Evidence for a motivational model. *Journal of Sport and Exercise Psychology*, 30, 240-268.
- Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. *British Journal of Educational Psychology*, 71, 225-242.
- Ntoumanis, N. (2005). A prospective study of participation in optional school physical education based on self-determination theory. *Journal of Educational Psychology*, 97, 444-453.
- Reeve, J., Jang, H., Carrell, D., Jeon, S., & Barsh, J. (2004). Enhancing students' engagement by increasing teachers' autonomy support. *Motivation and Emotion*, 28, 147-169.
- Standage, M., Duda, J. L. & Ntoumanis, N. (2003). A model of contextual motivation in physical education: Using constructs from self-determination and achievement goal theories to predict physical activity intentions. *Journal of Educational Psychology*, 95, 97-110.

- Standage, M., Duda, J.L., & Ntoumanis, N. (2005). A test of self-determination theory in school physical education. *British Journal of Educational Psychology, 75*, 411-433.
- Standage, M., Duda, J.L., & Ntoumanis, N. (2006). Students' motivational processes and their relationship to teacher ratings in school physical education: A self-determination theory approach. *Research Quarterly for Exercise and Sport, 77*, 100-110.
- Standage, M., & Gillison, F. (2007). Students' motivational responses toward school physical education and their relationship to general self-esteem and health-related quality of life. *Psychology of Sport and Exercise, 8*, 704-721.
- Standage M., Gillison, F., & Treasure, D.C. (2007). Self-determination and motivation in physical education. In M.S. Hagger & N.L.D Chatzisarantis (Eds.), *Intrinsic motivation and self-determination in exercise and sport* (pp. 71-85). Champaign, IL: Human Kinetics.
- Standage, M., Sebire, S.J., & Loney, T. (2008). Does exercise motivation predict engagement in objectively assessed bouts of moderate-intensity exercise?: A self-determination theory perspective. *Journal of Sport and Exercise Psychology, 30*, 337-352.
- Taylor, I., & Ntoumanis, N. (2007). Teacher motivational strategies and student self-determination in physical education. *Journal of Educational Psychology, 99*, 747-760.
- Taylor, I., & Ntoumanis, N., & Smith, B. (2008). *Perceived antecedents and types of motivational strategies in physical education*. Manuscript submitted for publication.
- Taylor, I., Ntoumanis, N., & Standage, M. (2008). A self-determination theory approach to understanding antecedents of teachers' motivational strategies in physical education. *Journal of Sport and Exercise Psychology, 30*, 75-94.

Tessier, D., Sarrazin, P., & Ntoumanis, N. (in press). The effect of an experimental program to support students' autonomy on the overt behaviours of physical education teachers.

*European Journal of Psychology of Education.*

Vansteenkiste, M., Simons, J., Soenens, B., & Lens, W. (2004). How to become a persevering exerciser? Providing a clear, future intrinsic goal in an autonomy supportive way. *Journal of Sport & Exercise Psychology*, 26, 232-249.