

## Physical Education Teachers inspiring young People towards a physically active Lifestyle?!: Motivational Dynamics in Physical Education

---

L. Haerens , M. Vansteenkiste, N. Aelterman, L. Van den Berghe, G. Cardon & I. Tallir

### Abstract

The present manuscript provides an overview of the research conducted by the sport pedagogy research group at the Department of Movement and Sports Sciences (Ghent University) on the topic of health based physical education. It aims to stimulate evidence-based reflective thinking on how physical education teachers can stimulate lifelong engagement in physical activity. Concepts such as 'motivation' and 'valuing a physically active life' are situated within theoretical and conceptual frameworks such as Self-Determination Theory and Physical Literacy. Recent evidence is presented to understand why motivation is crucially important to consider in the relationship between physical education and physical activity.

### Overall Introduction

*Personal note.* In June 2013 I was invited as a keynote speaker at the Physical Literacy Conference organized by Margaret Whitehead and David Kirk at the University of Bedfordshire. At the time, I had not read much about the concept of Physical Literacy; a really well documented and investigated concept in the Anglophone literature as became clear throughout my readings. To my knowledge, far less attention has been paid to the concept of Physical Literacy in the Flemish literature, although there might be related articles that use different terminology or descriptions, as 'Physical Literacy' is not easily translated into a clear-cut Dutch term. Throughout the readings on Physical Literacy I was surprised to notice very soon that, although our program of research starts from different theoretical and conceptual backgrounds, there is so much common ground with Physical Literacy.

*Physical literacy is defined as the motivation, confidence, physical competence, knowledge and understanding needed to value and take responsibility for maintaining purposeful physical pursuits throughout the life course (Whitehead, 2010).*

Many of the concepts that are part of this definition, and mainly those that are

underlined, are also central to Self-Determination Theory (Deci & Ryan, 2000), the theoretical framework that guides our research program on health based physical education (HBPE). The current paper summarizes the main ideas presented during the keynote delivered at the Physical Literacy Conference (June 2013, Bedford), including the findings of recently conducted studies and illustrating how the ideas and findings tie into the concept of Physical Literacy.

### **Teaching for health based physical education: what does it mean?**

One of the aims of all compulsory physical education (PE) programmes around the world is to educate for lifelong engagement in physical activity (PA) for health (Pühse & Gerber, 2005). Yet, researchers are increasingly arguing that, with so many children from all social backgrounds experiencing PE for several school years, PE remains ‘the pill not taken’ (McKenzie & Lounsbery, 2009). Furthermore, there is currently an astonishing lack of evidence on effective content and pedagogies for HBPE (Haerens, Kirk, Cardon, & De Bourdeaudhuij, 2011). Hence, the main aim of our on-going program of research is to investigate what is needed for PE to promote and realise lifelong engagement in PA.

In the present paper we will try to stimulate the readers’ evidence-based thinking on the most appropriate pedagogy for HBPE through six consecutive reflective questions. We also provide a theoretical summary of Self-Determination Theory (SDT) in relation to HBPE and Physical Literacy.

### **Question 1: Is Increasing moderate to vigorous physical activity (MVPA) during PE THE RIGHT WAY to promote lifelong engagement in physical activity?!**

As children’s and adolescents’ physical activity levels have been decreasing, the total amount of youth not meeting the health-related recommendations of sixty minutes or more moderate to vigorous physical activity (MVPA) per day continues to rise (Brettschneider & Naul, 2007; Currie et al., 2008). Hence, from a momentarily public health perspective, many researchers would argue that HBPE-lessons should aim at increasing students’ time spent in MVPA. However, there are at least three important evidence and practice-based arguments against this view. First, in most countries curriculum time for PE is limited and recently conducted studies in Flemish elementary (Cardon, Verstraete, De Clercq, & De Bourdeaudhuij, 2004) and secondary schools (Aelterman et al., 2012) using objective measures (observations and accelerometers) revealed that the average accumulated time spent in MVPA is generally low during PE with decreases from elementary to secondary schools. In elementary school PE 40% of the effective lesson time was spent in MVPA (corresponding to 14 minutes), whereas in secondary schools this was even lower with 25% of the effective lesson time spent in MVPA (9 minutes on average). Further, other international research (see Fairclough & Stratton, 2005, for an overview) has pointed out that adolescents engage in MVPA between 27% and 47% of the effective PE class time. These percentages are far short of the health-related recommendations of performing MVPA during at least 50% of effective

PE class time (U.S. Department of Health and Human Services, 2000). Unless more hours of PE are included in the curriculum or without combining different promotion strategies in different contexts (e.g. recess and after school hours), increasing MVPA during PE will always be insufficient for health (e.g. Aelterman et al., 2012; Cardon et al., 2004; Harris, 2000).

A second and maybe even stronger argument revealing that a strong focus on MVPA might also have negative side effects is related to the type of experience young people have during PE. Through HBPE, young people preferably catch those key experiences that stimulate them to be(come) active in other contexts such as during extracurricular activities at school (e.g. on the playground) and in leisure time (e.g. sports club membership). There is no doubt that many teachers are capable of increasing students' MVPA during PE, but there is no evidence that by increasing MVPA during PE teachers will create the types of experiences that motivate young people to remain active outside PE when at secondary school or in later life (also see Haerens, Kirk, Cardon, & De Bourdeaudhuij, 2010).

Third, increasing MVPA will never become the only goal of PE. According to governmentally determined standards in Flanders, the main official task of the PE teacher is to improve students' motor competence, to contribute to students' personal, social and emotional development, and to promote a physically active and healthy lifestyle that may persist into adulthood. All of these goals are crucially important and are not necessarily attained through increasing MVPA during PE.

## **Question 2: Okay, HBPE is not solely about increasing MVPA, but is there an alternative?**

In one of our recently published manuscripts (Haerens et al., 2011) we made a case for the development of a pedagogical model for HBPE drawing on Jewett, Bain and Ennis's (1995) and Metzler's (2005) ground-breaking work on models-based practice in PE. A pedagogical model is a general pattern for creating or shaping PE lessons, that is based on strong theoretical and conceptual foundations, has a central theme and incorporates directions for learning goals and corresponding teaching and learning features.

Based on a selective review of the literature, the central theme for the HBPE model was defined as 'students valuing a physically active life, so that they learn to value and practice appropriate physical activities that enhance health and well-being for the rest of their lives' (Haerens et al., 2011). Based on the research we have conducted since then, we slightly changed the previously formulated central theme, as we would argue that for PE to promote lifelong engagement in PA it is important to get youngsters to value OR enjoy PA for health. This is because when youngsters value or enjoy PA for health they are called to be autonomously motivated to engage in such activities. Interestingly, when Whitehead and Almond (Whitehead with Almond, 2013) talk about creating physical activities that foster Physical Literacy they similarly talk about activities that are rewarding and enjoyable, thus enhancing motivation, and emphasize the importance of students appreciating the value of PA for lifelong health and well-being. Both perspectives (Haerens et al., 2011; Whitehead with Almond, 2013) suggest that

students' quality of motivation is central to learning in HBPE lessons.

### Question 3: High quality motivation, what is it?

In our program of research we start from SDT (SDT, Deci & Ryan, 2000), a well documented and investigated macro-theory on human motivation, emotion and personality, to conceptualize what it means to be 'optimally motivated' to engage in PE and to be(come) or remain physically active in leisure time. One concept that is central to SDT is the concept of autonomy. When students 'autonomously' participate in PE they have the feeling they engage in the activities volitionally and with a sense of freedom. In line with this conceptualization of autonomy, SDT refers to autonomous forms of motivation as more optimal or self-determined types of motivation. Two forms of autonomous motivation are distinguished. Intrinsic motivation is considered the most 'optimal' or autonomous form of motivation. When intrinsically motivated, students participate in PE because they find the activities inherently interesting or enjoyable. Identified motivation, the second type of autonomous motivation, refers to students understanding the personal value and relevance of the activities offered, for example, if activities correspond to a personally endorsed goal (e.g. I put effort into PE because I feel more energetic afterwards).

Autonomous motivation is furthermore contrasted with controlled motivation, which refers to feelings of pressure to engage in the activities. Students can either feel externally (i.e. external regulation; e.g. I put effort into this lesson because the teacher will punish me otherwise) or internally pressured (i.e. introjected regulation; e.g. I put effort into this lesson because I want to prove to myself and others that I am good in athletics). Although controlled motivation brings feelings of pressure and tension and represents a less than optimal type of motivational regulation, it does involve a certain goal-directedness and intentionality. This is not the case with amotivation, an orientation referring to students not seeing any reason to engage in PE, for instance because they feel incompetent to attain the learning goals (Deci & Ryan, 2000). Figure 1 presents an overview of the motivational regulations distinguished within SDT.

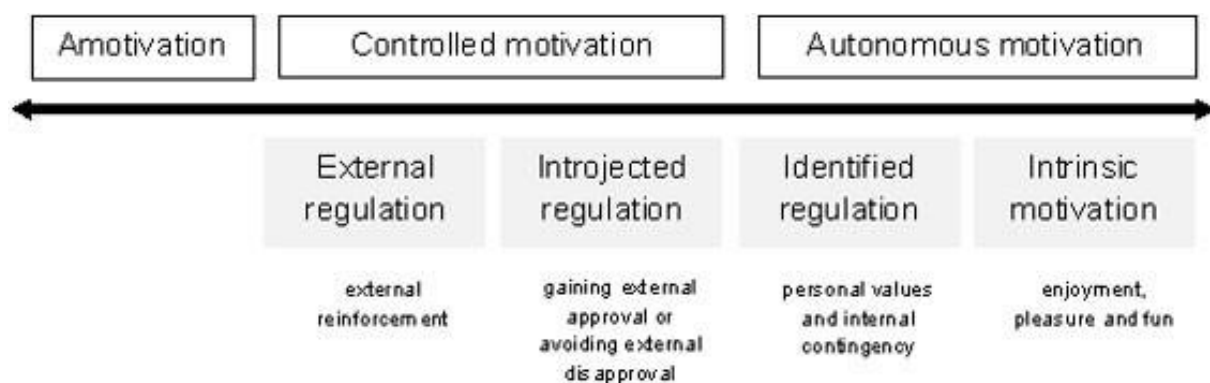


Figure 1. Motivational continuum of SDT<sup>1</sup> (Deci & Ryan, 2000, 2002).

SDT is the theory that guided the revision of the central theme of HBPE pedagogical model towards getting youngsters to value and enjoy PA for life so that they are (more) autonomously motivated to be(come) or remain active outside PE. Similarly, when Whitehead (2010) defines Physical Literacy as the motivation, confidence, physical competence knowledge and understanding to value and take responsibility for maintaining purposeful physical pursuits throughout the life course, common grounds with the well-researched concept of autonomous motivation can easily be identified.

#### **Question 4: Is motivation for PE really an important concept to consider in the relationship between experiences during PE and lifelong engagement in PA? What's the evidence?**

In our own research group, two studies were set up to investigate if autonomous motivation for PE is really an important concept to consider when investigating relationships between PE and lifelong engagement in PA. Both studies provided cross-sectional evidence to show that autonomous motivation for PE relates to youngsters' activity levels during PE (Aelterman et al., 2012) and beyond (Haerens, Kirk, Cardon, De Bourdeaudhuij, & Vansteenkiste, 2010). These findings are in line with previous research pointing to positive associations between autonomous motivation for PE and a variety of desirable cognitive, affective and behavioural outcomes (see Van den Berghe, Vansteenkiste, Cardon, Kirk, & Haerens, in press, for an overview), such as concentration, positive affect (Ntoumanis, 2005), effort and persistence (Standage, Duda, & Ntoumanis, 2006), rated engagement (Aelterman et al., 2012), and increased PA levels both in- and outside PE (Lonsdale, Sabiston, Raedeke, Ha, & Sum, 2009; Taylor, Ntoumanis, Standage, & Spray, 2010) and further indicate the need to investigate how teachers can create learning environments in which optimal forms of motivation (autonomous versus controlled) for PE are more likely to be encouraged.

#### **Question 5: How do we teach for optimal motivation?**

In SDT, the needs for autonomy, competence, and relatedness are identified as fundamental psychological nutrients for individuals' autonomous motivation. Parallel to these three needs, SDT specifies autonomy supportive, well-structured and warm learning environments as fostering autonomy, competence and relatedness and thus also autonomous motivation (see Haerens et al., 2013, for a more full introduction on need supportive learning environments). Interestingly, many of the recommendations made by Whitehead with Almond (2013) on creating PA experiences that foster Physical Literacy directly relate to one of these three dimensions of need supportive teaching environments as will be illustrated in the following paragraphs.

In short, in an autonomy supportive teaching environment teachers identify, nurture, and develop students' interests, preferences, and personal goals (Reeve, 2009). They use non-controlling or inviting language (e.g. Simons, Dewitte, & Lens, 2003; Vansteenkiste, Simons, Soenens, & Lens, 2004) and explain the personal relevance or potential interest and importance of the learning goals and activities (Deci, Egharri, Patrick, & Leone,

1994; Reeve, 2009; Reeve, Jang, Hardre, & Omura, 2002; Reeve & Jang, 2006). In terms of autonomy support, Whitehead with Almond (2013) similarly recommend to empower children to make decisions, to encourage children to ask questions, to listen to children's views, to allow children to choose their own tasks and challenges and to respect their views, to name just a few.

In a well-structured learning environment opportunities are created for students to feel competent, for instance when students know how to effectively achieve desired outcomes (Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009; Skinner & Belmont, 1993). Structure also gets manifested when teachers provide positive feedback (Koka & Hein, 2005; Mouratidis, Vansteenkiste, Lens, & Sideridis, 2008; Sierens et al., 2009), provide adequate help and support (Jang, Reeve, & Deci, 2010), and optimally challenging tasks (Sierens et al., 2009). Illustrative recommendations made by Whitehead with Almond (2013) are to ensure that tasks are within the reach of the child, to use praise, to guarantee that all children are able to experience success and to recognize and reward effort.

Finally, in a relatedness-supportive environment children feel safe, independent of whether they are good at PE or not, and the teacher is empathic and cares sincerely about the individual child. References demonstrative of relatedness support (Whitehead with Almond, 2013) are knowing students names, adopting a caring and empathic approach, and ensuring that all children feel valued.

#### **Question 6: Does teachers' need support really lead to more autonomous motivation and higher PA levels during and outside PE? Creating the evidence.**

Building on the findings of the studies investigating relationships between autonomous motivation for PE and important outcomes (Aelterman et al., 2012), we investigated in a next phase whether need supportive teaching behaviours indeed relate to students' motivation. For these studies, we externally observed teaching behaviours based on videotapes of the PE lessons but also measured them indirectly through students' reported perception of these behaviours (Haerens et al., 2013). Seventy four different PE lessons were coded every five minutes to assess how often each of 21 hypothesized need supportive behaviours occurred during the course of a regular PE lesson (Haerens et al., 2013). The 21 coded behaviours reflected four need supportive teaching dimensions: autonomy support (e.g. "The teacher asks the students questions about interests, problems, values or wishes."), structure before the learning process (e.g. "The teacher gives an overview of the content and structure of the lesson."), structure during the learning process (e.g. "The teacher offers the students a rationale for tasks and exercises."), and relatedness support (e.g. "The teacher takes the perspective of students into account, is empathic."). Reasonable evidence was obtained for the idea that observed need supportive teaching behaviours are perceived as such by the students. Specifically, both rated autonomy support and relatedness support related to the corresponding students' reported perceptions of these dimensions. Yet, no significant relations between observed and perceived structure were found, whereas an unanticipated yet interesting relation between observed relatedness support and

perceived structure was obtained (Haerens et al., 2013).

As external ratings of teachers' behaviours related to students' perceptions of these behaviours, the question arose whether students' perceived need support actually related to positive outcomes such as autonomous motivation and activity levels during PE. By means of structural equation modelling, we were able to show that students' perceived need support directly positively related to students' levels of objectively measured MVPA during PE. This relationship was furthermore fully mediated by students' perceived need satisfaction and autonomous motivation for PE (Haerens et al., unpublished data presented at the conference). As perceptions of need support have been found to relate to optimal motivation and positive behavioural and affective outcomes in other studies too (Black & Deci, 2000; Jang, Reeve, Ryan, & Kim, 2009; Standage et al., 2006) these findings imply that a more frequent implementation of the observed strategies may lead to better educational outcomes. Future intervention studies can confirm this hypothesis.

### **Question 7: What about the Dark side of Self-determination Theory?**

Similar to the positive side of the story, SDT also conceptualizes how the social context can actively thwart students' psychological needs so that feelings of need frustration and maladaptive outcomes are more likely to emerge (Deci & Ryan, 1985; 2000). Next to coding need supportive behaviours, we also started to code teachers' need thwarting behaviours, in order to investigate how these relate to students' functioning (see Van den Berghe et al., 2013). More specifically, in a recently conducted study (De Meyer et al., in press), we were able to show that teachers' engagement in controlling behaviours such as commanding, losing patience, getting irritated, yelling and using destructive criticism, were indeed notified by the students, and were positively related to students' controlled motivation and amotivation. These associations were obtained in spite of the low incidence of controlling teaching behaviours, suggesting that students easily pick up controlling teaching behaviours. Specifically, when PE teachers frequently used controlling teaching behaviours, students reported that they experienced their teachers as more controlling and that they felt more pressured to engage in the lesson (controlled motivation).

### **Conclusion**

In the present paper we argue that health based PE is all about "teaching for youngsters to be more likely to value and enjoy PA so that they are autonomously motivated to be(come) or remain active outside PE". The theoretical (see SDT, Deci & Ryan, 2000) and empirical arguments presented support recommendations for teachers to teach in a more need supportive and less controlling way. Hence, the logical next steps are to investigate how effective continuous professional development for teachers on these topics can be organized (see Aelterman et al., 2013, for a recent example on this topic) and what causes teachers to teach in a certain way (e.g. Taylor & Ntoumanis, 2006; Taylor, Ntoumanis, & Smith, 2009; Van den Berghe et al., 2013).

1 Integrated regulation a third type of autonomous motivation involves engagement in a behavior because the behavior aligns with students' values, aspirations and ideals more generally in life, is not presented in Figure 1.

## References

1. Aelterman, N., Vansteenkiste, M., Van Keer, H., De Meyer, J., Van den Berghe, L., & Haerens, L. (2013). Development and evaluation of a training on need-supportive teaching in physical education: Qualitative and quantitative findings. *Teaching and Teacher Education*, 29, 64-75. doi: 10.1016/j.tate.2012.09.001
2. Aelterman, N., Vansteenkiste, M., Van Keer, H., Van den Berghe, L., De Meyer, J., & Haerens, L. (2012). Students' objectively measured physical activity levels and engagement as a function of between-class and between-student differences in motivation toward physical education. *Journal of Sport & Exercise Psychology*, 34(4), 457-480.
3. 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(6), 740-756. doi: 10.1002/1098-237x(200011)84:6<740::aid-sce4>3.0.co;2-3
4. Brettschneider, W. D., & Naul, R. (2007). Obesity in Europe: Young People's Physical Activity and Sedentary Lifestyles. In W. D. Brettschneider & R. Naul (Eds.), *Sport Sciences International* (Vol. 4, pp. 7-26). Frankfurt am Main: Peter Lang.
5. Cardon, G., Verstraete, S., De Clercq, D., & De Bourdeaudhuij, I. (2004). Physical activity levels in elementary-school physical education: A comparison of swimming and nonswimming classes. *Journal of Teaching in Physical Education*, 23(3), 252-263.
6. Currie, C., Gabhainn, S. N., Godeau, E., Roberts, C., Smith, R., Currie, D. (2008). Inequalities in young people's health: HBSC international report from the 2005/2006 Survey. *Health Policy for Children and Adolescents* (Vol. 5). Copenhagen: WHO Regional Office for Europe.
7. De Meyer, J., Tallir, I. B., Soenens, B., Vansteenkiste, M., Aelterman, N., Van den Berghe, L. (in press). Relation between observed controlling teaching behavior and students' motivation in physical education. *Journal of Educational Psychology*.
8. Deci, E. L., Egharri, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization, The self-determination theory perspective. *Journal of Personality*, 62(1), 119-142. doi: 10.1111/j.1467-6494.1994.tb00797.x
9. Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum Publishing Co.
10. 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(4), 227-268. doi: 10.1207/s15327965pli1104\_01

11. Deci, E. L., & Ryan, R. M. (2002). *Handbook of self-determination research*. Rochester, New York: The University of Rochester Press.
12. Fairclough, S., & Stratton, G. (2005). 'Physical education makes you fit and healthy'. Physical education's contribution to young people's physical activity levels. *Health Education Research*, 20(1), 14-23. doi: 10.1093/her/cyg101
13. Haerens, L., Aelterman, N., Van den Berghe, L., De Meyer, J., Soenens, B., & Vansteenkiste, M. (2013). Observing physical education teachers' need-supportive interactions in classroom settings. *Journal of Sport & Exercise Psychology*, 35(1), 3-17.
14. Haerens, L., Kirk, D., Cardon, G., & De Bourdeaudhuij, I. (2010). *The development of a pedagogical model for Health-Based Physical Education*. Paper presented at the BERA Annual Conference, Coventry, United Kingdom.
15. Haerens, L., Kirk, D., Cardon, G., & De Bourdeaudhuij, I. (2011). Toward the development of a pedagogical model for health-based physical education. *Quest*, 63(3), 321-338.
16. Haerens, L., Kirk, D., Cardon, G., De Bourdeaudhuij, I., & Vansteenkiste, M. (2010). Motivational profiles for secondary school physical education and its relationship to the adoption of a physically active lifestyle among university students. *European Physical Education Review*, 16(2), 117-139. doi: 10.1177/1356336x10381304
17. Harris, J. (2000). *Health-related Exercise in the National Curriculum, Key Stages 1 to 4: Human Kinetics*.
18. Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology*, 102(3), 588-600. doi: 10.1037/a0019682
19. Jang, H., Reeve, J., Ryan, R. M., & Kim, A. (2009). Can Self-Determination Theory Explain What Underlies the Productive, Satisfying Learning Experiences of Collectivistically Oriented Korean Students? *Journal of Educational Psychology*, 101(3), 644-661. doi: 10.1037/a0014241
20. Jewett, A. E., Bain, L. L., & Ennis, C. D. (1995). *The curriculum process in physical education*: Brown & Benchmark.
21. Koka, A., & Hein, V. (2005). The effect of perceived teacher feedback on intrinsic motivation in physical education. *International Journal of Sport Psychology*, 36(2), 91-106.
22. Lonsdale, C., Sabiston, C. M., Raedeke, T. D., Ha, A. S. C., & Sum, R. K. W. (2009). Self-determined motivation and students' physical activity during structured physical education lessons and free choice periods. *Preventive Medicine*, 48(1), 69-73. doi: 10.1016/j.ypmed.2008.09.013

23. McKenzie, T. L., & Lounsbery, M. A. F. (2009). School Physical Education: The Pill Not Taken. *American Journal of Lifestyle Medicine*, 3(3), 219-225. doi: 10.1177/1559827609331562
24. Metzler, M. W. (2005). *Instructional models for physical education*: Holcomb Hathaway, Publishers.
25. Mouratidis, A., 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 & Exercise Psychology*, 30(2), 240-268.
26. Ntoumanis, N. (2005). A prospective study of participation in optional school physical education using a self-determination theory framework. *Journal of Educational Psychology*, 97(3), 444-453. doi: 10.1037/0022-0663.97.3.444
27. Pühse, U., & Gerber, M. (2005). *International Comparison of Physical Education: Concepts, Problems, Prospects*: Meyer & Meyer Sport.
28. Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist*, 44(3), 159-175. doi: 10.1080/00461520903028990
29. Reeve, J., Jang, H., Hardre, P., & Omura, M. (2002). Providing a Rationale in an Autonomy-Supportive Way as a Strategy to Motivate Others During an Uninteresting Activity. *Motivation and Emotion*, 26(3), 183-207. doi: 10.1023/a:1021711629417
30. Reeve, J., & Jang, H. S. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology*, 98(1), 209-218. doi: 10.1037/0022-0663.98.1.209
31. Sierens, E., Vansteenkiste, M., Goossens, L., Soenens, B., & Dochy, F. (2009). The synergistic relationship of perceived autonomy support and structure in the prediction of self-regulated learning. *British Journal of Educational Psychology*, 79, 57-68. doi: 10.1348/000709908x304398
32. Simons, J., Dewitte, S., & Lens, W. (2003). "Don't do it for me. Do it for yourself!" - Stressing the personal relevance enhances motivation in physical education. *Journal of Sport & Exercise Psychology*, 25(2), 145-160.
33. Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, 85(4), 571-581. doi: 10.1037/0022-0663.85.4.571
34. 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(1), 100-110.
35. Taylor, I. M., & Ntoumanis, N. (2006). Perceived antecedents and types of teacher motivational strategies in physical education. *Journal of Sport & Exercise Psychology*, 28, S182-S183.

36. Taylor, I. M., Ntoumanis, N., & Smith, B. (2009). The social context as a determinant of teacher motivational strategies in physical education. *Psychology of Sport and Exercise*, 10(2), 235-243. doi: 10.1016/j.psychsport.2008.09.002
37. Taylor, I. M., Ntoumanis, N., Standage, M., & Spray, C. M. (2010). Motivational Predictors of Physical Education Students' Effort, Exercise Intentions, and Leisure-Time Physical Activity: A Multilevel Linear Growth Analysis. *Journal of Sport & Exercise Psychology*, 32(1), 99-120.
38. U.S. Department of Health and Human Services. (2000). *Healthy people 2010: Understanding and improving health*. Washington, DC: Author.
39. Van den Berghe, L., Soenens, B., Vansteenkiste, M., Aelterman, N., Cardon, G., Tallir, I. B. (2013). Observed need-supportive and need-thwarting teaching behavior in physical education: Do teachers' motivational orientations matter? *Psychology of Sport and Exercise*, 14(5), 650-661. doi: 10.1016/j.psychsport.2013.04.006
40. Van den Berghe, L., Vansteenkiste, M., Cardon, G., Kirk, D., & Haerens, L. (in press). Research on self-determination in physical education: Key findings and proposals for future research. *Physical Education and Sport Pedagogy*, iFirst article, 1-25. doi: 10.1080/17408989.2012.732563
41. 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(2), 232-249.
42. Whitehead, M. E. (Ed.). (2010). *Physical Literacy: Throughout the lifecourse*. London: Routledge.
43. Whitehead, M. E., with Almond, L. (2013). Creating learning experiences to foster physical literacy. *Physical Education Matters*. 8.1

## Contact

### Leen Haerens

Ghent University  
Faculty of Medicine and Health Sciences  
Department of Movement and Sports Sciences  
Watersportlaan 2  
B-9000 Gent  
Belgium  
Email: [Leen.Haerens@UGent.be](mailto:Leen.Haerens@UGent.be)

Co-Authors

### Nathalie Aelterman

Ghent University  
Faculty of Psychology and Educational Sciences

Department of Developmental, Personality and Social Psychology  
Faculty of Medicine and Health Sciences  
Department of Movement and Sports Sciences  
Ghent University  
Watersportlaan 2  
B-9000 Gent  
Belgium  
Email: [Nathalie.Aelterman@UGent.be](mailto:Nathalie.Aelterman@UGent.be)

**Lynn Van den Berghe**

Ghent University  
Faculty of Medicine and Health Sciences  
Department of Movement and Sports Sciences  
Watersportlaan 2  
B-9000 Gent  
Belgium  
Email: [L.VandenBerghe@UGent.be](mailto:L.VandenBerghe@UGent.be)

**Maarten Vansteenkiste**

Ghent University  
Faculty of Psychology and Educational Sciences  
Department of Developmental, Personality and Social Psychology  
Henri Dunantlaan 2  
B-9000 Gent  
Belgium  
Email: [Maarten.Vansteenkiste@UGent.be](mailto:Maarten.Vansteenkiste@UGent.be)

**Greet Cardon**

Ghent University  
Faculty of Medicine and Health Sciences  
Department of Movement and Sports Sciences  
Watersportlaan 2  
B-9000 Gent  
Belgium  
Email: [Greet.Cardon@UGent.be](mailto:Greet.Cardon@UGent.be)

**Isabel Tallir**

Ghent University  
Faculty of Medicine and Health Sciences  
Department of Movement and Sports Sciences  
Watersportlaan 2  
B-9000 Gent  
Belgium  
Email: [Isabel.Tallir@UGent.be](mailto:Isabel.Tallir@UGent.be)

---



