European Physical Education Review

http://epe.sagepub.com/

The associations between seventh grade Finnish students' motivational climate, perceived competence, self-determined motivation, and fundamental movement skills

Sami Kalaja, Timo Jaakkola, Anthony Watt, Jarmo Liukkonen and Yngvar Ommundsen

European Physical Education Review 2009 15: 315
DOI: 10.1177/1356336X09364714

The online version of this article can be found at:
http://epe.sagepub.com/content/15/3/315

Published by:
SAGE
http://www.sagepublications.com

On behalf of:
North West Counties Physical Education Association

EUROPEAN PHYSICAL EDUCATION REVIEW [DOI: 10.1177/1356336X09364714]
Volume15(3):315–335:364714

The associations between seventh grade Finnish students' motivational climate, perceived competence, self-determined motivation, and fundamental movement skills

Sami Kalaja, **Timo Jaakkola** University of Jyväskylä, Finland

Anthony Watt Victoria University, Melbourne, Australia

Jarmo Liukkonen University of Jyväskylä, Finland

and

Yngvar Ommundsen Norwegian School of Sport Sciences, Oslo, Norway

Abstract

The aim of the study was to investigate the relationships between motivational climate, perceived competence, self-determined motivation towards physical education (PE) and the fundamental movement skills of Finnish secondary school students. A sample of 370 seventh-grade PE students (girls n = 189; boys n = 181; mean age = 13.08; SD = 0.25) completed measures pertaining to motivational climates, perceived competence, regulation of motivation, and fundamental movement skills. Path analysis revealed results generally consistent with the theoretical tenets of the self-determination and the achievement goal theories by demonstrating that a task-involving motivational climate influenced perceived competence, which in turn affected more self-determined motivation towards PE. Furthermore, results revealed that this motivational sequence was associated with increased balance skill. A sequence consisting of task-involving climate, intrinsically regulated motivation, and balance skills was also observed. Additionally, the results indicated that task-involving motivational climate influenced perceived competence, in turn influencing manipulative and locomotor skills. Finally, an ego-involving climate was found to be a marginally positive predictor of manipulative skills.

Key-words: fundamental movement skills • motivational climate • perceived competence • physical education • self-determined motivation

Introduction

It is widely believed that exercise motivation is one crucial element in the adoption of a physically active lifestyle (Malina et al., 2004). The quality of children's experiences while exercising in schools, sport clubs, or when involved in self-initiated physical activity in their leisure time might be crucial for their future activity patterns (McKenzie, 2007). There is evidence that childhood patterns of physical activity track into adulthood (Telama et al., 2005). Additionally, research has shown that fundamental movement skills and physical activity are related in both childhood and adulthood (McKenzie et al., 2004; Raudsepp and Päll, 2006; Sääkslahti et al., 1999). Fundamental movement skill competency increases the likelihood of children participating in different physical activities throughout their lives (Haywood and Getchell, 2005; Stodden et al., 2008). Indeed, studies have shown that childhood motor skill proficiency influences adolescent physical activity and fitness, mediated by perceived sports competence (Barnett et al., 2008a).

Motivational research has examined a broad range of cognitive, affective and behavioural outcomes resulting from personal and environmental motivational conditions and processes. To our knowledge, however, no studies have investigated the role of motivational factors in the performance of fundamental movement skills at the secondary school age level. Examining the relationship between motivational factors and fundamental movement skill levels in the context of secondary school physical education (PE) would seem important because students in this age group are potentially sensitive to motivational loss emanating from a lowering in perceived physical and motor competence (Barnett et al., 2008b; Stodden et al., 2008). Hence, the purpose of the present study is to examine the associations between social and cognitive motivational factors and secondary school PE students' demonstration of fundamental movement skills.

Fundamental movement skills

Fundamental movement skills include balance, manipulative, and locomotor skills. Balance refers to both the body remaining in place but moving around its horizontal or vertical axis (Gallahue and Donnelly, 2003) and the process for maintaining postural stability (Westcott et al., 1997). Specifically, Westcott et al. defined static balance as 'the ability to maintain a posture, such as balancing in a standing or sitting position', and dynamic balance as 'the ability to maintain postural control during other movements, such as when reaching for an object or walking across a lawn' (1997: 630). According to Gallahue and Donnelly (2003), axial movements, such as bending, stretching, twisting, turning, swinging, body inversion, body rolling and landing/stopping are all considered to be balance skills. Manipulative movement skills include either gross motor or fine motor movements. Gross motor manipulation involves movements that give force to objects or receive force from objects. Throwing, catching, kicking, trapping, striking, volleying, bouncing, ball rolling and punting

are considered to be fundamental gross motor manipulative skills. The term fine motor manipulation refers to object-handling activities that emphasize motor control, precision and accuracy of movement. Locomotor skills refer to the body being transported in a horizontal or vertical direction from one point to another. Activities, such as walking, running, jumping, hopping, skipping, galloping, sliding, leaping and climbing are representative examples of locomotor movement skills (Gallahue and Donnelly, 2003).

Fundamental movement skills constitute crucial elements in the performance of specific sport skills (Gallahue and Donnelly, 2003), and the development of a functional level of fundamental movement skills can be considered as an important motivating force for the prolonged engagement of children in physical activity (Stodden et al., 2008). Fundamental motor skills, therefore, can facilitate participation and success in many sport and exercise activities undertaken during both school and leisure time (Barnett et. al., 2008b). Hence, it seems important to identify the motivational prerequisites for the learning of fundamental motor skills in PE. In the present study we focus on the motivational climate in PE, perceived physical competence and the regulation of motivation as prerequisites.

Motivational climate and fundamental movement skills

Motivational climate refers to a situational psychological perception of the activity that directs the goals of action (Ames, 1992). A motivational climate influences the achievement-related cognitions, affective responses and behaviours in an activity, such as PE (e.g. Standage et al., 2003a). According to the achievement goal theory (Nicholls, 1989), two motivational climates are proposed to exist, specifically a task-involving climate and an ego-involving climate. In a task-involving climate, students are rewarded for effort, and they concentrate on cooperation, learning and task-mastery (Ames, 1992). In an ego-involving climate teachers typically emphasize performance outcomes, competition, and social comparison between students.

Empirical studies in PE have revealed that a task-involving climate is positively associated with perceived competence and intrinsically regulated motivation (e.g. Cox and Williams, 2008; Standage et al., 2003b). An ego-involving climate has been shown to be unrelated to intrinsic motivation and perceived competence (e.g. Cury et al., 1996; Standage et al., 2003b), instead predicting amotivation (Ommundsen and Eikanger- Kvalo, 2007). Although an ego-involving motivational climate has not typically been found to be negatively related to perceived competence and intrinsically regulated motivation (Standage et al., 2003b), it has been proposed that they are thwarted in environments which include social and normative comparison and the provision of rewards contingent on performance (Deci and Ryan, 2000). Associations between motivational climates and motor skills have also been demonstrated. Theeboom et al. (1995) implemented a three-week intervention for 119 children aged 8–12 years who participated in an organized sports programme. Results revealed that those in the task-involving group exhibited better motor skills than those in the

ego-involving group. Martin et al. (2009) conducted a six-week intervention for 64 kindergarten children and observed that the high task-involving group improved significantly in locomotor and object control skills compared with the low task-involving group. Despite these findings, research on the role of social and personal motivational prerequisites for fundamental motor skill learning in the PE context have not yet been reported.

Perceived competence and fundamental movement skills

The concept of perceived physical competence has been used to describe the perception a person has of their abilities resulting from cumulative interactions with the environment (Harter, 1978). Fox (1997) defines perceived competence as 'the statement of personal ability that generalises across a domain, such as sport, scholarship, or work' (Fox, 1997: p. xii.). Within a multidimensional and hierarchically organized model of self-perception (Shavelson and Bolus, 1982), an important tenet is that general self-esteem results from self-perceptions of different domain specific competencies. These include competencies in the physical, academic, social, and emotional domains. If considered personally important, high perceived competencies in a particular life domain may affect young peoples' global self-esteem. Furthermore, an individual with high perceived physical competence in a particular domain may perceive being competent as personally valuable, thus, enhancing their self-esteem (Fox, 1997).

According to Harter's (1978) competence motivation theory, highly competent individuals persist longer in certain activities compared with individuals of low perceived competence. Additionally, individuals in achievement situations seek activities that provide feelings of competence and avoid those with a probability of failure. Sonstroem (1978) suggested that positive perception of physical competence leads to more positive attitudes toward physical activity. Indeed, studies have shown that perceived physical competence is associated with self-determined motivation (e.g. Ntoumanis, 2005; Standage et al., 2003b), and higher levels of physical activity (Bagoien and Halvari, 2005), motor competence (e.g. Castelli et al., 2007; Raudsepp and Liblik, 2002), and motor skill performance (Ebbeck and Becker, 1994; Sonstroem et al., 1993).

The regulation of motivation and fundamental movement skills

According to the self-determination theory, the regulation of motivation reflects a continuum comprising different levels of self-determination ranging from amotivation to true intrinsic motivation (Deci and Ryan, 2000). Four different types of extrinsic motivation exist within the continuum, these being external regulation, introjected regulation, identified regulation, and integrated regulation (Deci and Ryan, 2000; Ryan and Connell, 1989).

Intrinsic motivation involves pursuing an activity out of interest and enjoyment without external contingencies (Deci and Ryan, 2000). External regulation is occurring if an activity is done because of external factors, such as rewards, constraints, or fear of punishment. Motivational forces within introjected regulation are partially internalized, but self-esteem oriented pressure still regulates behaviours. These include avoidance of guilt and shame, or concerns about self- and other approval (Ryan and Connell, 1989). Identified regulation occurs when an individual has recognized and accepted the underlying behaviour values or goals (Deci and Ryan, 2000). The behaviour then typically takes the form of 'I want' (Ryan and Connell, 1989). The most self-determined form of extrinsic motivation is integrated regulation. It is the most complete form of internalization of extrinsic motivation. Integrated regulation involves the identification of the importance of behaviours, but also integrates those identifications with other aspects of the self. In integrated regulation a person has fully accepted behaviour by bringing it into harmony or coherence with other aspects of their goals and values (Deci and Ryan, 2000). Amotivation is defined as a state in which a person lacks the intention to behave, and thus lacks motivation (Deci and Ryan, 2000). Amotivated individuals experience feelings of incompetence, expectancies of uncontrollability, and perform activities without purpose.

According to the self-determination theory, self-determined forms of regulation promote adaptive cognitive, affective and behavioural functioning by facilitating enhanced learning, improved performance, higher interest and greater effort. Less self-determined forms of regulation, in contrast, are negatively related to these outcomes (Grolnick and Ryan, 1987; Williams et al., 1996). In PE, studies have revealed links between perceived competence and self-determination, and a task-involving climate and self-determined motivation link that is mediated by enhanced competence perceptions (e.g. Ommundsen and Eikanger-Kvalo, 2007; Standage et al., 2006). Research has also shown that individuals who are intrinsically motivated are more persistent in their physical activity (Fortier and Grenier, 1999; Pelletier et al., 2001; Sarrazin et al., 2001). Despite a lot of research based on self-determination theory being conducted in school PE (e.g. Ntoumanis, 2005; Ommundsen and Eikanger-Kvalo, 2007; Standage et al., 2006), the role of intrinsically regulated motivation in the development of motor skills has yet to be investigated.

The four-stage motivational sequence model of the teacher – student relationship

A viable way to combine tenets from the achievement goal theory and the self-determination perspective in the study of fundamental movement skills is to make use of the four-stage causal sequence model of motivation put forward by Vallerand and co-workers (Mageau and Vallerand, 2003; Vallerand and Losier, 1999). This model holds that contextual factors, such as motivational climates, influence the regulation of motivation, mediated by needs satisfaction, one being the need for competence. In turn, the regulation of motivation is hypothesized to impact on

cognitive, affective and behavioural consequences. In this research, we have adopted an approach akin to the motivational sequence identified in the four-stage sequential model of motivation (social factors – psychological mediators – types of motivation – consequences) proposed by Vallerand and colleagues. While Mageau and Vallerand (2003) also proposed a role for the need for autonomy and relatedness as mediators, we chose to include only perceived competence, given that fuelling the need for physical competence would seem most important when examining motor skills as outcome. The hypothesized model of the association among study variables is presented in Figure 1.

In the sequential model, social factors, such as motivational class climate represent the most distal factor, followed by the mediator, with the regulation of motivation as the most proximal determinant of the hypothesized cognitive, affective and behavioural consequences in the sequence. In PE the proposed motivational sequence has been investigated focusing on a variety of cognitive, affective and behavioural consequences, such as boredom, effort, intentions for future participation, concentration, positive and negative affects, enjoyment, leisure time physical activity and sport participation, and preference for challenging tasks (Ntoumanis, 2005; Ommundsen and Eikanger-Kvalo, 2007; Standage et al., 2003b, 2005, 2006). These consequences have shown to be positive in task-involving climate and negative in ego-involving climate.

The purpose of the study

While the results of previous studies have supported the theoretical predictions embedded in the sequential motivational model in the context of PE, the sequential motivational model has not been examined with fundamental movement skills as a behavioural outcome. Hence, the main purpose of the present study was to combine tenets of the achievement goal theory and the self-determination perspective using the four-stage causal sequence model of motivation put forward by Vallerand and co-workers (Mageau and Vallerand, 2003; Vallerand and Losier, 1999) to examine

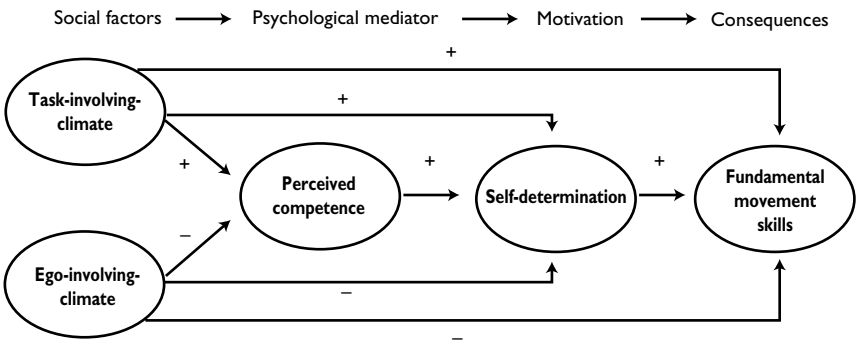

Figure 1 The hypothesized sequential pattern of associations among the study variables

motivational antecedents of fundamental movement skills in school PE. We hypothesized that a perception of task-involving climate, perceived competence and self-determined motivation would positively and sequentially predict balance, manipulative and locomotor skills. We expected an opposing pattern of relationships for an ego-involving climate. Additionally, as suggested by Vallerand and Losier (1999) we expected that proximal antecedents (self-determined motivation in PE) would account for more variance in fundamental movement skills than would more distal antecedents (e.g. motivational climates and perceived competence). Because it has been suggested that the similar sequence of motivational process exists across both genders, gender-specific analyses were not conducted (Vallerand, 1997).

Method

Participants

The participants were recruited from three secondary schools in the city of Jyväskylä in central Finland. The final sample comprised 370 Grade 7 students (girls n = 189; boys n =181; mean age = 13.08; SD = 0.25). The students were drawn from 23 classes taught by 10 PE teachers. The Grade 7 cohort constituted a convenience sample specifically in regards to minimizing the disruption to the normal school PE programme and in providing a greater opportunity to monitor the group longitudinally over their secondary school experience as an additional study within a larger fundamental movement skills project.

Measures

Sport Motivation Scale

The contextual self-determined motivation towards PE was measured by the Finnish version of the Sport Motivation Scale (SMS; Pelletier et al., 1995). The SMS consists of seven subscales, comprising three types of intrinsic motivation which are IM to accomplish things ('Because I feel a lot of personal satisfaction while mastering certain difficult training techniques'), IM to know ('For the pleasure it gives me to know about the sport skills that I practise') and IM to experience stimulation ('For the pleasure I feel in living exciting experiences'), three forms of extrinsic motivation including identified regulation ('Because, in my opinion, it is one of the best ways to get acquainted with other students'), introjected regulation ('Because it is absolutely necessary to do sports if one wants to be in shape') and external regulation ('Because it allows me to be well regarded by people I know'), and amotivation ('I often asked myself; I cannot seem to achieve the goals that I have set for myself'). Each dimension consists of four items. Each item was rated on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). The SMS used in this study had the individual item stem of 'Why I'm currently participating in physical education'. Subscale scores were calculated for amotivation, external regulation, introjected

regulation, identified regulation, and intrinsic motivation. When calculating the subscale for intrinsic motivation we combined all 12 items, measuring three different types of intrinsic motivation. This is the normal procedure before calculating the Relative Autonomy Index (RAI) as suggested by Vallerand (1997). The next step was to formulate the RAI which was done by weighting the scores of the subscales so as to derive a single score. The various motivation types are theoretically posited to lie on a continuum of self-determination from intrinsic motivation to amotivation. Weights are given based on the position of the particular motivation type on the continuum (Vallerand, 1997). This was done by weighing intrinsic motivation (+2) and identified regulation (+1) positively. Then introjected regulation and external regulation were summed up and weighed –1. Amotivation was weighed –2. The value of the RAI can be either positive or negative. An increasingly positive index score is reflective of an increasingly self-determined form of motivation for the given activity. This index has been shown to indicate the amount of self-determination in an activity. The Finnish version of the SMS has demonstrated high levels of reliability and validity. In the study by Jaakkola et al. (2008), the Cronbach's alpha coefficients of the SMS subscales were above .70, indicating satisfactory internal consistency. Additionally, the indices of confirmatory factor analyses demonstrated satisfactory construct validity. Subsequently, correlation analysis of the Finnish version of the SMS has supported existing motivational continuum and, thus, the formulation of RAI index. Subscales that are adjacent to each other along the continuum correlated more positively than those further from each other (Jaakkola and Liukkonen, 2006).

Sport Competence Scale

Perceived sport competence in physical activity was analysed using the Finnish version of the sport competence subscale of the Physical Self-Perception Profile (PSPP; Fox, 1990; Fox and Corbin, 1989). Each item was rated on a five-point Osgood scale from 'I'm among the best when it comes to athletic ability' (1) to 'I'm not among the best when it comes to athletic ability' (5) (scale scores reversed in analyses). The Sport Competence Scale used in this study had the individual item stem of 'What am I like?' Scale score was calculated by summing item scores. Research has shown that the Sport Competence Scale has demonstrated satisfactory reliability and validity (Fox and Corbin, 1989; Wang et al., 2008).

Intrinsic Motivation Climate in Physical Education Questionnaire

Motivational climate was measured by using the Intrinsic Motivation Climate in Physical Education Questionnaire (IMCPEQ), which consists of four subscales comprising autonomy support, social relatedness, task- and ego-involving climate factors (Soini et al., 2004). For this study purpose only task-involving and ego-involving subscales of the IMCPQ were used. The task-involving climate factor consists of five items (e.g. 'It is important for the students to try their best during PE lessons') and the ego-involving factor includes four items (e.g. 'During PE lessons

students compare their performance mainly to that of others'). Each item was rated on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). The IMCPEQ had the individual item stem of 'In my physical education class . . .' Research has demonstrated satisfactory reliability and validity for the IMCPEQ (Soini et al., 2004).

All measures were translated into Finnish by a panel of experts in sport psychology and later back into English by a first-language English-speaking translator. The back-translated English version was compared with the original version for consistency. Items that were shown to have a number of possible meanings in Finnish were discussed by the panel of experts in order to redraft them to be as accurate as possible in meaning.

Balance skill

Balance skill was measured using the flamingo standing test. The test measures static balance and is one test of the motor test section of the Eurofit test battery (EUROFIT, 1988). In the test procedure, the participant had to stand for 30 seconds on one leg balanced on a 50cm long, 4cm high, and 3cm wide wooden beam. The free leg was bent backwards and the back of the foot was gripped with the hand on the same side. There was no practising time before the test. Each time the participant lost their balance by releasing the free leg or touched the floor with any part of the body, the stopwatch was stopped. After each such fall, the same procedure was started again. The number of attempts required within the 30 second time period was the participant's final score. The test was executed twice (2 $\times$ 30 s), first with the right leg and then with the left leg, and the scores were summed. The researcher announced time limits and recorded the attempts. Nupponen (1997) reported test–retest correlations of .53 for the boys and .59 for the girls for the flamingo standing test. Tsigilis et al. (2002) examined the reliability of flamingo standing test with university students. In their study the test–retest correlation for the flamingo standing test was .73. Earlier studies show that the flamingo standing test has demonstrated moderate reliabilities.

Locomotor skill

The leaping test was used to measure one component of students' locomotor skills. The leaping test is widely used in Finnish PE because it is included in the physical fitness test battery, which teachers normally implement during all semesters in secondary schools. In the leaping test, the task was to leap five times consecutively starting from the initial leaping position with both legs parallel. After the first jump the leaping sequence was a leap with the preferred leg followed by a leap with the opposite leg until the sequence of five leaps was completed. The test was performed on a 6cm thick gymnastics mat. The final landing was also completed with both legs parallel. The result was measured as the length of the leap in centimetres from the heel of the leg furthest back upon the landing phase. The participants were allowed

to practise three times before the test, which was implemented once. The researcher measured all performances. Nupponen and Telama (1998) analysed the reliability of the leaping test using a sample of 548 Grade 8 Finnish PE students and reported a test–retest correlation of .95 for boys and .93 for girls.

Manipulative skills

Manipulative skills were assessed using the figure-8 dribbling test in which the task was to dribble a volleyball around a figure-8 track, first using the feet (30 s), and secondly using the hands (30 s). Participants were permitted two practice rounds. The participant started behind the starting line and following the 'go' signal started to dribble the ball with their feet along the figure-8 track. The track included arrows indicating the dribbling direction. Both the participant and the ball had to go around the marker cones. After 30 seconds the researchers gave a 'change' instruction and the manipulation style was switched to hand-dribbling. In the hand-dribbling task the ball did not have to pass the cones, only the participant. Changing of the dribbling hand was allowed. The total dribbling time was one minute. If the ball left the test area (i.e. ringed zone constructed of wooden gymnastic benches) the stopwatch was not stopped. The final result was the total number of crossed lines in one minute. The dribbling test is a part of the widely used Finnish Fitness Test Package (Nupponen et al., 1999). Nupponen (1997) investigated the reliability of the test and reported test–retest correlations of .70 for the boys and .60 for the girls for a large sample of Finnish school students. These correlations demonstrate moderate reliability of the figure-8 dribbling test.

Procedure

The data were collected during one 90-minute PE class in the school gym by the researchers under the supervision of the students' PE teacher. The students voluntarily participated in both the motor tests and the self-report questionnaires. Each test period started with a standardized ten-minute warm-up phase. Standard parental consent procedures were followed in consultation with the principals of each school. Ethics approval was obtained from the University of Jyväskylä ethics committee.

Data analysis

The validity and reliability of the Sport Motivation Scale, the Sport Competence Scale, and the IMCPEQ were analysed using confirmatory factor analysis and Cronbach's alpha coefficients. The participants' scores for both the motor tests and the self-report questionnaires were summarized using descriptive statistics. Pearson's correlation coefficients and structural equation modelling were used to examine the relationships between variables. Statistical analyses were conducted using the SPSS for Windows 16.0 and LISREL 8.30 software. It should be noticed that the scales in perceived competence and balance skill measures are in a different direction than in other

instruments. Therefore, for the clarity in results in the correlation and SEM analyses we transformed those two scales so that they would be comparable with other measures.

Results

Validity and reliability of the scales

In order to examine how well the seven-factor structure of the SMS, one-factor structure of the Sport Competence Scale and two-factor structure of the IMCPEQ fitted the data, we conducted confirmatory factor analyses. To determine the appropriateness of the model, the Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Incremental Fit Index (IFI), Relative Fit Index (RFI), and the Root Mean Square Error of Approximation (RMSEA) scores were calculated (Arbuckle, 2006). The TLI, CFI, NFI, IFI and RFI indices appearing in the Table 1 vary from 0 to 1. Fit indices greater than 0.90 are indicative of acceptable model fit. In addition, an RMSEA score of lower than 0.05 is indicative of a representative model. Finally, the normed chi-square index (χ^2/dF) representing parsimonious fit should be below the marginal maximum of 3.00. Common factors were allowed to be correlated. No correlated residuals were permitted. The goodness-of-fit indices are shown in Table 1. The results indicated that the IMCPEQ and the Sport Competence Scale fitted the data well. Only RMSEA indices for the both scales were below acceptable limits. The goodness-of-fit indices of the SMS were somewhat below recommended levels. However, all indices of the SMS were consistently close to acceptable limits.

Cronbach's alpha coefficients for the subdimensions of the SMS, IMCPEQ, and the Sport Competence Scale were above .70, indicating high internal consistency of the scales.

Table 1 Confirmatory factor analyses for the SMS, the IMCPEQ, and the Sport Competence Scale

	SMS	IMCPEQ	Sport Competence Scale
Chi-square test (CMIN)	1135.28	52.98	30.63
degrees of freedom (df)	329	26	5
CMIN/df	3.45	2.11	6.13
Tucker-Lewis Index (TLI)	0.86	0.96	0.91
Comparative Fit Index (CFI)	0.88	0.98	0.97
Incremental Fit Index (IFI)	0.88	0.98	0.97
Relative Fit Index (RFI)	0.81	0.93	0.90
Normed Fit Index (NFI)	0.84	0.96	0.97
Root Mean Square Error of Approximation (RMSEA)	0.081	0.55	0.12

Table 2 Descriptive statistics of the study variables

	M	SD	Min	Max
Relative Autonomy Index	2.46	2.70	5.29	8.96
Task-involving climate	3.81	0.79	1.00	5.00
Ego-involving climate	2.95	0.88	1.00	5.00
Perceived competence	2.68	0.80	1.00	4.80
Balance skill (errors)	10.84	4.81	2	25
Locomotor skill (meters)	8.75	1.04	5.75	11.42
Manipulative skills (sides)	14.84	2.98	8	23

Descriptive statistics and correlation analysis

The descriptive statistics showed that students perceived their PE climate as more task-involving than ego-involving and reported higher levels of self-determined than non-self-determined forms of motivation.

Significant positive correlations were found between task-involving motivational climate and all other variables than locomotion. Instead, ego-involving climate correlated significantly and positively only with perceived competence and manipulation. Perceived competence correlated significantly and positively with all other study variables. However, it should be recognized that the association between perceived competence and task-involving motivational climate was higher than between perceived competence and ego-involving motivational climate. The self-determined motivation correlated significantly and positively with all other variables except for ego-involving motivational climate and manipulation. Pearson's correlation coefficients for all measures are shown in Table 3.

Structural equation modelling

The adequacy of the hypothesized model of motivational sequence was tested via structural equation modelling (SEM). First, descriptive statistics were analysed and results indicated that the scales were normally distributed. Therefore, the maximum likelihood method was applied. The overall fit of the analysed model to the data was

Table 3 Correlations among the study variables

	1	2	3	4	5	6	7
1. Task climate	–						
2. Ego climate	0.23***	–					
3. Perceived competence	0.34***	0.15**	–				
4. RAI	0.58***	0.00	0.49***	–			
5. Balance skill	0.15**	0.09	0.15**	0.20***	–		
6. Locomotor skill	0.11	0.11	0.22***	0.15**	0.16**	–	
7. Manipulative skills	0.13*	0.19**	0.22***	0.07	0.10	0.45***	–

$p < 0.05$*, $p < 0.01$**, $p < 0.001$***

investigated using the chi-square test (χ^2). A non-significant result shows that the proposed model has an acceptable fit to the data. Additionally, the Standardized Root Mean Square Residual (SRMR), the Root Mean Square Error of Approximation (RMSEA), the Non Normed Fit Index (NNFI), the Comparative Fit Index (CFI), the Goodness of Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI) were examined. The NNFI, CFI, GFI, and AGFI indices vary from 0 to 1. Fit indices greater than 0.90 are indicative of acceptable model fit. In addition, an RMSEA and SRMR of less than 0.05 are indicative of a representative model. Additionally, the proportion of variance predicted by independent variables for the dependent variables were investigated using squared multiple correlations (r^2).

The results of the proposed model demonstrated poor fit to the data. The next phase was to remove all insignificant path coefficients from the model. After this procedure SEM analysis revealed that the final model had a good fit to the data (χ^2 = [12] = 18.82, $p > .05$; NNFI = 0.96; CFI = 0.98; GFI = 0.98; AGFI = 95; SRMR = 0.050; RMSEA = 0.047). The model revealed an indirect path from task-involving motivational climate to balance skill mediated by perceived competence and self-determined motivation. The model also demonstrated an indirect path from task-involving climate mediated by perceived competence onto manipulation and locomotion, respectively. There was also a indirect path from task-involving climate mediated by self-determined motivation to balance. Finally, we observed a direct path from ego-involving climate to manipulation. Squared multiple correlations revealed that self-determined motivation was explained rather strongly (45 percent) by task-involving motivational climate and perceived competence. All other squared multiple correlations were low. The final model is presented in Figure 2.

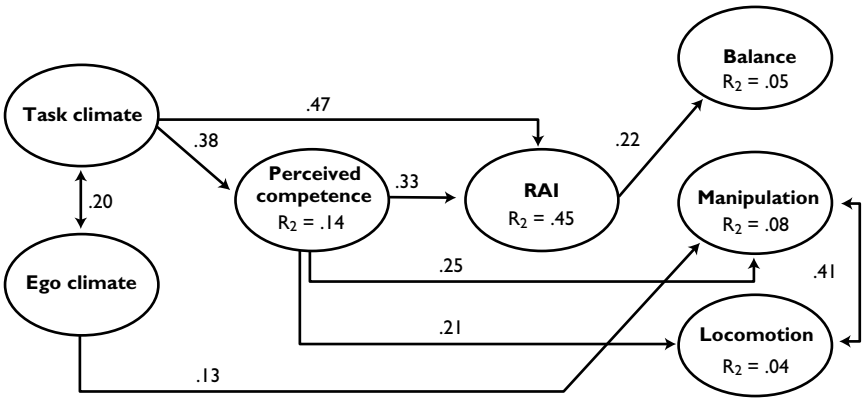

Figure 2 The final path model for study variables

Discussion

The aim of the study was to investigate a sequentially framed set of relationships between motivational climate, perceived competence, self-determined motivation

towards PE, and the fundamental movement skills of Finnish secondary school students. More specifically, structural equation modelling was applied to investigate the theoretically proposed sequential process of motivation (Vallerand and Losier, 1999). To our knowledge, this study represents the first attempt to examine the motivational sequence model using fundamental movement skills as outcome in secondary school PE.

A positive and indirect path was expected from a task-involving motivational climate through perceived competence and self-determined motivation to balance skill. This pattern was found and is consistent with the theoretical tenets of the achievement goal theory and the self-determination theory holding that a mastery supportive motivational climate influences perceived competence, which in turn affects motivation towards PE and subsequently leads to increased balance skill (Ames, 1992; Deci and Ryan, 1985, 2000). This finding supports existing suggestions of a pattern of 'social factors > psychological mediators > motivation > consequences' within the PE domain (Ntoumanis, 2005; Ommundsen and Eikanger-Kvalo, 2007; Standage et al., 2003b, 2005, 2006). Moreover, the result extends findings from previous studies that have taken advantage of the sequential mediation model while focusing on different outcomes (e.g. Cox and Williams, 2008; Cury et al., 1996; Ommundsen and Eikanger-Kvalo, 2007; Standage et al., 2006). Apparently, PE teachers are in a position to stimulate students' balance skill by emphasizing student effort, progress and learning. Such a climate seems to facilitate the stimulation of students' need for competence, in turn stimulating more self-determined forms of motivation, and finally balance skill. The additional path observed consisting of a high task-involving climate – enhanced self-determined motivation – improved balance skill reflects that the enhancement of students' balance skill is not contingent on students' competence perceptions provided that their motivation towards the PE tasks seems relatively intrinsically regulated. Indeed, intrinsically regulated motivation is seen as eliciting effort and perseverance (Deci and Ryan, 2000), both important factors for students in order to learn movement skills.

The full sequential model was only partly supported when using manipulative and locomotor skills as outcomes. In both cases students' perceived competence was found to play a mediation role. The link between competence and movement skills is consistent with previous research reporting that individuals who are confident in relation to their motor skills typically achieve higher scores on measures of actual motor competence and motor skills (e.g. Castelli et al., 2007; Ebbeck and Becker, 1994). Apparently, while the enhancement of balance skills seems contingent on autonomous forms of motivation, satisfying students' need to feel competent seems the key towards the enhancement of manipulative and locomotor skills. It might well be that the learning of manipulative and locomotor skills are the types of tasks that require that students' perceive themselves to have the confidence and the physical capacity needed to develop those specific motor skills. Indeed, in terms of coordination complexity, these two motor skills should be regarded as more challenging than the ability to keep one's static balance for a certain time period.

It is important to acknowledge that the amount of variance accounted for in movement skills by the sequentially framed set of determinants was rather modest. Hence, future studies would need to look for alternative environmental and personal characteristics as determinants for students' fundamental movement skill performances. With respect to this, researchers have recently argued for the need to develop skill-analysis competency in PE teachers based on evidence that pre-service PE teacher do not obtain better scores on skill analysis competency than undergraduate students (Lounsberry and Coker, 2008).

We also hypothesized that high ego-involving climate would lead to reduced fundamental movement skills paths, mediated by lower perceived competence and elevated levels of extrinsically regulated motivation. No one of these paths was supported. Instead, a positive direct path, albeit modest in size, was found between an ego-involving motivational climate and locomotor skills. Apparently, a class climate perceived to be focused on social comparison, competition and being the best did not represent any hindrance for these students when it comes to fundamental movement skill performances. For manipulative skills, ego-involving climate facilitated students' performances. It could be that the three opportunities to practise permitted before the test on this skill elicited social comparison among the students' for this particular motor skill test, thus mildly favouring those perceiving the climate as ego-involving. Nevertheless, teachers should concentrate on creating a task-involving climate and work towards limiting an emphasis on an ego-involving climate. Indeed, Ommundsen and Eikanger-Kvalo (2007) and Standage et al. (2003b) also recognized in their studies that an ego-involving climate counteracted PE students' intrinsic motivation and even facilitated amotivation (Ommundsen and Eikanger-Kvalo, 2007).

The amount of variance accounted for in balance skill was higher for RAI (4 percent) (proximal determinant) than for perceived competence (2.3 percent) (more distal determinant) and for task-involving climate (2.3 percent) (most distal determinant). This pattern of findings supports Vallerand and Losier's (1999) suggestions that proximal factors in the motivational process should be stronger predictors of behavioural outcomes than distal factors.

It is also noteworthy that task-involving climate and perceived competence together explained 45 percent of the variance of self-determined motivation towards PE. This finding is important from the pedagogical perspective and suggests that one of the most powerful means to affect students' motivation in PE is to enhance their perceived competence by creating a task-involving motivational climate. The pattern of associations is in line with previous studies in the PE context and demonstrates that conditions in which the teacher emphasizes effort, trying hard, learning and progress contributes towards students' behavioural practices to be self-determined in PE (Ntoumanis, 2001; Ommundsen and Eikanger-Kvalo, 2007).

Limitations and future studies

The SMS in this study obtained less than optimal factorial validity, and earlier studies revealed the figure-8 dribbling and flamingo tests to have suboptimal reliability scores. Hence, the possible shortcomings pertaining to the psychometrics of these measures need to be taken into account when interpreting the results. Despite variability in test–retest reliability shown for the tests in previous studies, there was little difference in the amount of variance accounted for by the variable set for the three different motor skill tests. In fact, the test revealing the lowest reliability estimates in previous studies accounted for the highest amount of variance in the current investigation (e.g. manipulative skills, 8 percent of the variance). Another limitation of the study is that it was not possible to control for the students' starting level of movement skills. It might be that students' with greater experience, for example in manipulative skills, performed better in figure-8 dribbling in this study than those with less experience.

Future research could benefit from examining how students' motivation to participate in sport and exercise combines with fundamental movement skill levels and specific sport skill levels to affect physical activity patterns over time. There is also a need to develop tests in PE to better capture the whole pattern of students' fundamental movement skills. One possibility would be using process-oriented (quality of the movement) rather than product-oriented (quantity or outcome of the movement) tests. In this study we used only product-oriented tests to analyse students' motor skills. Additionally, in future it would also be important to include motivational climate dimensions pertaining to autonomy support and social relatedness in studies applying the motivational sequence model when examining determinants of movement skills. This might provide important information as to whether other qualities of the social context add to the prediction of fundamental motor skills in PE.

References

Ames, C. (1992) 'Classrooms: Goals, Structures and Student Motivation', *Journal of Educational Psychology* 84: 261–71.

Arbuckle, J. L. (2006) *Amos 7.0 User's Guide.* Chicago, IL: SPSS.

Bagoien, T. E. and Halvari, H. (2005) 'Autonomous Motivation: Involvement in Physical Activity, and Perceived Sport Competence: Structural and Mediator Models', *Perceptual and Motor Skills* 100(1): 3–21.

Barnett, L. M., Van Beurden, E., Morgan, P. J. and Beard, J. R. (2008a) 'Perceived Sports Competence Mediates the Relationship between Childhood Motor Proficiency and Adolescent Physical Activity and Fitness: A Longitudinal Assessment', *International Journal of Behavioral Nutrition and Physical Activity*, published online; doi: 10.1186/1479–5868–5–40.

Barnett, L. M., Van Beurden, E., Morgan, P. J., Brooks, L. O. and Beard, J. R. (2008b) 'Does Childhood Motor Skill Proficiency Predict Adolescent Fitness?', *Medicine and Science in Sports and Exercise* 40: 2137–44.

Castelli, D. M., Woods, A. M., Normeyer, E. E., Valley, J. A. and Graber, K. C. (2007) 'Perceived Versus Actual Motor Competence in Children', *Research Quarterly for Exercise and Sport* 78(suppl. 1): A51–A52.

Cox, A. and Williams, L. (2008) 'The Roles of Perceived Teacher Support, Motivational Climate, and Psychological Need Satisfaction in Students' Physical Education Motivation', *Journal of Sport and Exercise Psychology* 30(2): 222–40.

Cury, F., Biddle, S., Famose, J.-P., Goudas, M., Sarrazin, P. and Durand, M. (1996) 'Personal and Situational Factors Influencing Intrinsic Interest of Adolescent Girls in School Physical Education: A Structural Equation Modelling Analysis', *Educational Psychology* 16: 305–15.

Deci, E. L. and Ryan, R. M. (1985) *Intrinsic Motivation and Self-Determination in Human Behaviour.* New York: Plenum Press.

Deci, E. L. and Ryan, R. M. (2000) 'Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being', *American Psychologist* 55: 68–78.

Ebbeck, V. and Becker, S. L. (1994) 'Psychosocial Predictors of Goal Orientations in Youth Soccer', *Research Quarterly for Exercise and Sport* 65: 355–62.

EUROFIT (1988) *European Test of Physical Fitness*. Rome: Council of Europe, Committee for the Development of Sport.

Fortier, M. S. and Grenier, M. N. (1999) 'Les déterminants personnels et situationnels de l'adhérence à l'exercise: une étude prospective' (Personal and Situational Determinants of Exercise Adherence), *STAPS* 48: 25–37.

Fox, K. R. (1990) *The Physical Self-Perception Profile Manual*. De Kalb, IL: Office for Health Promotion, Northern Illinois University.

Fox, K. R. (1997) 'The Physical Self and Processes in Self-Esteem Development', in K. R. Fox (ed), *The Physical Self: From Motivation to Well-Being,* pp. 111–39. Champaign, IL: Human Kinetics.

Fox, K. R. and Corbin C. B. (1989) 'The Physical Self-Perception Profile: Development and Preliminary Validation', *Journal of Sport and Exercise Psychology* 11: 408–30.

Gallahue, D. L. and Donnelly, F. C. (2003) *Developmental Physical Education for All Children*. Champaign, IL: Human Kinetics.

Grolnick, W. S. and Ryan, R. M. (1987) 'Autonomy in Children's Learning: An Experimental and Individual Difference Investigation', *Journal of Personality and Social Psychology* 5(5): 890–8.

Harter, S. (1978) 'Effectance Motivation Reconsidered: Toward a Developmental Model', *Human Development* 21: 34–64.

Haywood, K. M. and Getchell, N. (2005) *Life Span Motor Development*. Champaign, IL: Human Kinetics.

Jaakkola, T. and Liukkonen, J. (2006) 'Changes in Students' Self-Determined Motivation and Goal Orientation as a Result of Motivational Climate Intervention within High School Physical Education Classes', *International Journal of Sport and Exercise Psychology* 4(3): 302–25.

Jaakkola, T., Liukkonen, J., Ommundsen, Y. and Laakso, T. (2008) 'The Relationship between Situational and Contextual Self-Determined Motivation and Physical Activity Intensity as Measured by Heart Rates During Ninth Grade Students' Physical Education Classes', *European Physical Education Review* 14(1): 13–31.

Lounsberry, M. and Coker, C. (2008) 'Developing Skill-Analysis Competency in Physical Education Teachers', *Quest* 60: 255–67.

McKenzie, T. L. (2007) 'The Preparation of Physical Educators: A Public Health Perspective', *Quest* 59: 346–57.

McKenzie, T. L., Sallis, J. F. and Broyles, S. L. (2004) 'Childhood Movement Skills:

Predictors of Physical Activity in Anglo American and Mexican American Adolescents?', *Research Quarterly for Exercise and Sport* 73: 238–44.

Mageau, G. A. and Vallerand, R. J. (2003) 'The Coach–Athlete Relationship: A Motivational Model', *Journal of Sports Science* 21: 883–904.

Malina, R. M., Bouchard, C. and Bar-Or, O. (2004) *Growth, Maturation, and Physical Activity*. Champaign, IL: Human Kinetics.

Martin, E. H., Rudisill, M. E. and Hastie, P. A. (2009) 'Motivational Climate and Fundamental Movement Skill Performance in a Naturalistic Physical Education Setting', *Physical Education and Sport Pedagogy* 14(3): 227–40.

Nicholls, J.G. (1989) *The Competitive Ethos and Democratic Education.* Cambridge, MA: Harvard University Press.

Ntoumanis, N. (2001) 'A Self-Determination Approach to the Understanding of Motivation in Physical Education', *British Journal of Educational Psychology* 71(2): 225–43.

Ntoumanis, N. (2005) 'A Prospective Study of Participation in Optional School Physical Education Using a Self-Determination Theory Framework', *Journal of Eductional Psychology* 97(3): 444–53.

Nupponen, H. (1997) *9–16-vuotiaiden liikunnallinen kehittyminen* (The Development of Sport Hobbies in 9–16 year-old Children). Likes-Research Reports on Sport and Health, 106. Jyväskylä: LIKES-Research Center.

Nupponen, H. and Telama, R. (1998) *Liikunta ja liikunnallisuus osana 11–16-vuotiaiden eurooppalaisten nuorten elämäntapaa* (Physical Activity and Motor Performance as Part of the Lifestyle of 11–16-year-old European Young People). Jyväskylän yliopisto: Liikuntakasvatuksen julkaisuja 1.

Nupponen, H., Soini, H. and Telama, R. (1999) *Koululaisten kunnon ja liikehallinnan mittaaminen* (The Measurement of Students' Fitness and Motor Skills), Likes-Research Reports on Sport and Health, 118. Jyväskylä: LIKES-Research Center.

Ommundsen, Y. and Eikanger-Kvalo, S. (2007) 'Autonomy-Mastery, Supportive or Performance Focused? Different Teacher Behaviours and Pupils' Outcomes in Physical Education', *Scandinavian Journal of Educational Research* 51: 385–413.

Pelletier, L. G., Fortier, M. S., Vallerand, R. J., Tuson, K. M., Brière, N. M. and Blais, M. R. (1995) 'Toward a New Measure of Intrinsic Motivation, Extrinsic Motivation, and Amotivation in Sports: The Sport Motivation Scale (SMS)', *Journal of Sport and Exercise Psychology* 17: 35–53.

Pelletier, L. G., Fortier, M. S., Vallerand, R. J. and Brière, N. M. (2001) 'Associations among Perceived Autonomy Support, Forms of Self-Regulation, and Persistence: A Prospective Study', *Motivation and Emotion* 25: 279–306.

Raudsepp, L. and Liblik, R. (2002) 'Relationship of Perceived and Actual Competence in Children', *Perceptual and Motor Skills* 94: 1059–70.

Raudsepp, L. and Päll, P. (2006) 'The Relationship between Fundamental Motor Skills and Outside-School Physical Activity of Elementary School Children', *Pediatric Exercise Science* 18: 426–35.

Ryan, R. M. and Connell, J. P. (1989) 'Perceived Locus of Causality and Internalization: Examining the Reasons for Acting in Two Domains', *Journal of Personality and Social Psychology* 57(5): 749–61.

Sarrazin, P., Vallerand, R. J., Guillet, E., Pelletier, L. and Cury, F. (2001) 'Motivation and Drop-Out in Female Handballers: A 21-Month Prospective Study', *European Journal of Social Psychology* 32: 395–418.

Shavelson, R. J. and Bolus, R. (1982) 'Self-Concept: The Interplay of Theory and Methods', *Journal of Educational Psychology* 74: 3–17.

Soini, M., Liukkonen, J. and Jaakkola, T. (2004) 'Koululiikunnan motivaatioilmastomittarin validointi – koettua pätevyyttä, autonomiaa ja sosiaalista yhteenkuuluvuutta edistävän ilmaston yhteys itsearvioituun fyysiseen aktiivisuuteen' (The Validation of Intrinsic Motivation Climate in Physical Education Questionnaire), *Liikunta ja tiede* (Sport and Science) 41: 58–63.

Sonstroem, R. J. (1978) 'Physical Estimation and Attraction Scales: Rationale and Research', *Medicine and Science in Sports and Exercise* 10: 97–102.

Sonstroem, R. J., Harlow, L. L. and Salisbury, K. S. (1993) 'Path Analysis of a Self-Esteem Model across a Competitive Swim Season', *Research Quarterly for Exercise and Sport* 64(3): 335–42.

Standage, M., Duda, J. L. and Ntoumanis, N. (2003a) 'Predicting Motivational Regulations in Physical Education: The Interplay between Dispositional Goal Orientations, Motivational Climate and Perceived Competence', *Journal of Sport Sciences* 21(8): 631–47.

Standage, M., Duda, J. L. and Ntoumanis, N. (2003b) '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(1): 97–110.

Standage, M., Duda, J. L. and Ntoumanis, N. (2005) 'A Test of Self-Determination Theory in School Physical Education', *British Journal of Educational Psychology* 75: 411–33.

Standage, M., Duda, J. L. and 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): 100–10.

Stodden, D. F., Goodway, J. D., Langendorfer, S. J., Roberton, M. A., Rudisill, M. E., Garcia, C. and Garcia, L. E. (2008) 'A Developmental Perspective on the Role of Motor Skill Competence in Physical Activity: An Emergent Relationship', *Quest* 60: 290–306.

Sääkslahti, A., Numminen, P., Niinikoski, H., Rask-Nissilä, L., Viikari, J., Tuominen, J. and Välimäki, I. (1999) 'Is Physical Activity Related to Body Size, Fundamental Motor Skills, and CHD Risk Factors in Early Childhood?', *Pediatric Exercise Science* 11: 327–40.

Telama, R., Yang, X., Viikari, J., Välimäki, I., Wanne, O. and Raitakari, O. (2005) 'Physical Activity from Childhood to adulthood: A 21-Year Tracking Study', *American Journal of Preventive Medicine* 3: 267–73.

Theeboom, M., De Knop, P. and Weiss, M. R. (1995). 'Motivational Climate, Psychological Responses, and Motor Skill Development in Children's Sport: A Field-Based Intervention Study', *Journal of Sport and Exercise Psychology* 17: 294–311.

Tsigilis, N., Douda, H. and Tokmakidis, S. (2002) 'Test–Retest Reliability of the Eurofit Test Battery Administered to University Students', *Perceptual and Motor Skills* 95: 1295–1300.

Vallerand, R. J. (1997) 'Toward a Hierarchical Model of Intrinsic and Extrinsic Motivation', in M. P. Zanna (ed.) *Advances in Motivation in Sport Psychology,* pp. 271–360. San Diego, CA: Academic Press.

Vallerand, R. J. and Losier, G. F. (1999) 'An Integrative Analysis of Intrinsic and Extrinsic Motivation in Sport', *Journal of Applied Sport Psychology* 11: 142–69.

Wang, C. K., Lim, B. S., Aplin, N. G., Chia, Y. H., McNeill, M. and Tan, W. K. (2008) 'Students' Attitudes and Perceived Purposes of Physical Education in Singapore: Perspectives from a 2 × 2 Achievement Goal Framework', *European Physical Education Review* 14(1): 51–70.

Westcott, S. L., Lowes, L. P. and Richardson, P. K. (1997) 'Evaluation of Postural Stability in Children: Current Theories and Assessment Tools', *Physical Therapy* 77: 629–45.

Williams, G. C., Grow, V. M., Freedman, Z. R., Ryan, R. M. and Deci, E. L. (1996) 'Motivational Predictors of Weight Loss and Weight-Loss Maintenance', *Journal of Personality and Social Psychology* 70(1): 115–26.

Résumé

Relations entre le climat motivationnel d'élèves finlandais en classe de 5ème, la compétence perçue, la motivation autodéterminée, et des habiletés motrices fondamentales

Le but de cette étude était d'étudier la relation entre le climat motivationnel, la compétence perçue, la motivation autodéterminée envers l'éducation physique et sportive (EPS), et des habiletés motrices fondamentales d'élèves finlandais du secondaire. Un échantillon de 370 élèves de 5ème (filles N = 189 ; garçons = 181 ; E.T. = 0,25) ont rempli les questionnaires mesurant le climat motivationnel, la compétence perçue, les régulations motivationnelles, et des habiletés motrices fondamentales. Des analyses de pistes causales ont révélé des résultats globalement consistant avec les postulats de l'autodétermination et la théorie des buts d'accomplissement en démontrant que le climat motivationnel orienté vers la tâche influençait la compétence perçue, qui en retour affectait la motivation envers l'EPS. De plus, les résultats ont révélé que cette séquence motivationnelle était associée à une augmentation de l'habileté à s'équilibrer. Une séquence de relations comprenant le climat orienté vers la tâche – la motivation intrinsèque, et l'habileté à s'équilibrer a également été observé. Aussi, les résultats ont montré que le climat orienté vers la tâche influençait la compétence perçue influençant en retour les habiletés liées à la manipulation et à la locomotion. Finalement, le climat orienté vers l'ego s'est avéré être marginalement un prédicateur positif des habiletés liées à la manipulation.

Resumen

La asociación entre el clima emocional, la percepción de competencia, la auto motivación y las habilidades de movimiento básicas de los estudiantes finlandeses de séptimo grado

El objetivo del estudio era investigar las relaciones entre el clima emocional, la percepción de competencia, la auto motivación hacia la Educación Física (EF) y las habilidades básicas de movimiento de los estudiantes de escuelas secundarias de Finlandia. Una muestra de 370 estudiantes de séptimo grado de E.F (189 chicas, 181 chicos, media de edad de 13,08, y S.D = 0,25), completaron los datos pertenecientes al clima emocional, la percepción de competencia, la auto motivación hacia la Educación Física (EF) y las habilidades básicas de movimiento. El análisis reveló resultados compatibles con los principios teóricos de la automotivación y con las teorías de la meta de logro, demostrando que las tareas que impliquen un clima emocional influyen en la competencia percibida y a su vez en la motivación hacia la E.F. Además, los resultados revelaron que esta motivación estaba asociada con el incremento del equilibrio. Una secuencia consistente en la creación de un clima de realización de tareas, la motivación intrínsecamente regulada y las habilidades de equilibrio también fueron observadas. Adicionalmente, los resultados indicaron que las tareas que implican un clima motivacional influyen en la percepción de competencia y en las habilidades manipulativas y locomotrices. Finalmente, se encontró que un clima que implique el 'yo' (ego) es un predictor positivo de las habilidades manipulativas.

Zussamenfassung

Der Zusammenhang zwischen dem Motivationsklima, wahrgenommene Kompetenz, selbstbestimmte Motivation und grundlegende Bewegungsfertigkeiten bei finnischen 7.-Klässlern

Ziel der Studie war die Untersuchung der Beziehungen zwischen Motivationsklima, wahrgenommener Kompetenz, selbstbestimmter Motivation im Sportunterricht und der grundlegender Bewegungsfertigkeiten finnischer Mittelstufen-Schülerinnen und –Schüler. In einer Stichprobe von 370 7.-Klässler/innen (Mädchen n = 189; Jungen n = 181; mittleres Alter = 13.08; SD = 0.25) wurden Messungen in Bezug auf Motivationsklima, wahrgenommene Kompetenz, Motivationsregulation und grundlegenden Bewegungsfertigkeiten durchgeführt. Pfadanalysen bestätigten generelle theoretische Ansätze zu Selbstbestimmung und Leistungsorientierung, und zeigten auf, dass ein aufgabenorientiertes Motivationsklima die wahrgenommene Kompetenz beeinflusste und dies sich wiederum die Motivation im Sportunterricht auswirkte. Darüber hinaus wurde deutlich, dass die motivationalen Zusammenhänge einhergehen mit verbesserten Gleichgewichtsfertigkeiten. Es konnte ein Zusammenhang von aufgaben-orientiertem Klima, intrinsisch regulierter Motivation und Gleichgewichtsfertigkeiten beobachtet werden. Weiterhin zeigten die Ergebnisse auf, dass ein aufgaben-orientiertes Motivationsklima die wahrgenommene Kompetenz beeinflusst hat und dass dies wiederum einen Einfluss auf die Geschicklichkeit und Fertigkeiten in der Fortbewegung hatte. Schließlich wurde deutlich, dass ein individuums-bezogenes Motivationsklima nur geringe positive Auswirkungen auf Geschicklichkeit hatte.

Sami Kalaja is principal of a secondary school at Jyväskylä and a researcher at the Department of Sport Sciences, University of Jyväskylä, Finland.

Timo Jaakkola is lecturer of Sport Pedagogy at the Department of Sport Sciences, University of Jyväskylä, Finland.

Jarmo Liukkonen is Professor of Sport Pedagogy at the Department of Sport Sciences, University of Jyväskylä, Finland.

Yngvar Ommundsen is Professor at the Norwegian School of Sport Sciences, Norway.

Anthony Watt is a Senior Lecturer of Physical Education at Victoria University in Melbourne, Australia.

Address for correspondence: Timo Jaakkola, University of Jyväskylä, Department of Sport Sciences, Keskussairaalantie 4, PO Box 35 (Viv), 40014, University of Jyväskylä, Finland. [email: timo.jaakkola@sport.jyu.fi]
