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Physical education teachers' education to promote students' physical activity and to cope with sedentary behaviour

Submission date	**Recruitment status**	[_] Prospectively registered
21/12/2021	No longer recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
24/02/2022	Completed	[_] Results
Last Edited	**Condition category**	[_] Individual participant data
31/03/2026	Other	[X] Record updated in last year

Plain English summary of protocol

Background and study aims.
Adolescents worldwide are not sufficiently physically active and represent a vulnerable population in terms of their future health. International and national guidelines (see WHO, 2020; Ministero Salute, 2021) recommend the promotion of physical activity (PA) for youth. In particular, school has been considered as one of the most favourable settings to foster youngsters' active lifestyle, and this is because Physical Education (PE) teachers can play a key role in motivating students and in improving their confidence toward PA. For these reasons, the present study is developed and implemented in the secondary school context.
The rationale for the present research project is rooted in the Trans-contextual Model of Motivation (Hagger & Chatzirantis, 2007), integrated with other theories from psychological, educational, and physical activity fields (Papaioannou et al., 2020). The proposed model provides an explanation of how the motivational climate experienced in a particular setting can be transferred to other contexts. For instance, students' positive experiences in physical education (PE) classes could lead to an increased motivation to be physically active in the leisure-time. The study aims to increase out of school physical activity (PA) levels of the secondary school students involved in the project, and it will be pursued through two intermediate objectives: (1) to enhance PE teachers' skills and approach to PA promotion, and (b) to change students' approach to out-of-school PA.

Who can participate?
Students and PE teachers of lower and upper secondary schools in the Marche Region (Italy) can partake in this project.

What does the study involve?
PE teachers' participation involves a Continuing Professional Development training (CPDt) mainly focused on the motivational aspects and psychological strategies relating to PA. Teachers are also asked to apply the acquired knowledge and methods in their PE classes. Students are asked to regularly attend their classes. Both teachers and students are asked to complete a questionnaire pack at the beginning and at the end of the project. Additionally, PE teachers are asked to administer physical fitness tests to their students in the same time periods. Both the

questionnaire packs and physical tests have received ethical approval from an appropriate institution (i.e. the Ethics Committee of the Free University of Bozen-Bolzano) and will provide data for the quantitative assessment of the considered outcomes and variables. A part of the teachers and students represents the control group, and will be involved in the intervention at a later time.

What are the possible benefits and risks of participating?
Participation in this study does not involve any risks apart from those associated with regular PE classes. On the other hand, students may benefit of the behavioural intervention by becoming more physically active and consequently improving their physical fitness, and teachers may acquire new knowledge, practical skills, and increase their work engagement as an effect of the training.

Where is the study run from?
The study is entirely performed in Italy and involves teachers and students from secondary schools in the Marche Region. The research design and the CPDt are developed and implemented by the research team led by Prof. Attilio Carraro from the Faculty of Education of the Free University of Bozen-Bolzano, with the support provided by the Marche Regional School Office (USR Marche).

When is the study starting and how long is it expected to run for?
October 2020 to July 2023

Who is funding the study?
The project is funded by the Free University of Bozen-Bolzano and by the USR Marche (Italy)

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
PE4MOVE 6118

Study information

Scientific Title
An internet-supported continuing professional development training with secondary school physical education teachers. The Physical Education for Moving (PE4MOVE) cluster randomized trial

Acronym
PE4MOVE

Study objectives
The PE4MOVE project involves Physical Education (PE) teachers and students of lower and upper secondary schools in the Marche Region (Italy). Teachers and their classrooms are randomly assigned to an intervention group (IG) or a wait-list control group (CG). Teachers in the IG participate in a Continuing Professional Development training at the beginning of the project and are invited to apply the contents of the training with their students (intervention condition, IC), whereas teachers in the CG will be trained and will apply contents with their students (control condition, CC) at a later time an. The main hypotheses of the study are:
1. PE teachers in the IG will positively change their approach to PA promotion;
2. Students in the IC will change their approach to Physical Activity (PA) and increase the volume of out of school PA.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 15/04/2021, Free University of Bozen - Bolzano Ethics Research Committee (piazza Università, 1, 39100, Bolzano, Italy; +39 0471 012606; Federica.Ansaloni@unibz.it), ref: 1/2021

Primary study design
Interventional

Study design
Multicentre cluster-randomized wait-list controlled design

Study type(s)
Other

Health condition(s) or problem(s) studied
Promotion of physical activity and reduction of sedentary behaviour in adolescents

Interventions
Participants are secondary school Physical Education (PE) teachers and their students living in the Marche Region, Italy. Teachers are randomly allocated to either an intervention group (IG) or a wait-list control group (CG), by a staff member of the Marche Regional School Office.
The intervention with PE teachers consists of internet-supported Continuing Professional Development training (CPDt). PE teachers of both groups attend the same training but at

different periods. Specifically, PE teachers in the IG participate in the CPDt and apply the acquired knowledge and skills with 3-to-5 of their classrooms, during the 2021/22 school year. Teachers in the CG will participate and apply with students in 2022/2023.
The CPDt consists of four 75-minute webinars focusing on nine topics:
(1) the concept of physical literacy; (2) the most recent guidelines on physical activity (PA) and sedentary behaviour; (3) the role of PE teachers for the promotion of students' active lifestyle; (4) the theories relating to self-determination and motivational climate in PE; (5) the need-supportive teaching style in PE; (6) the role of enjoyment in PE and PA practice; (7) goal-setting, self-monitoring and planning strategies; (8) the use of technologies to foster students' out-of-school PA; (9) the "Team Pentathlon" intervention in school settings. Moreover, four 90-minute laboratories involving groups of 15-to-20 teachers each are organized.

Intervention Type
Behavioural

Primary outcome(s)
For all the following variables Time 0 (T0) refers to data collected at the beginning of the project (i.e., between September and November 2021), and Time 1 (T1) refers to data collected at the end of the project (i.e., between May and July 2022).

Students' out of school PA levels:
PA levels are measured through both self-report instruments and objective tests, in detail:
1. Objective PA levels are measured using accelerometers (ActiGraph GT3X-BT); for previous use within research on PA promotion, see for an example Sirard & Pate, 2001; Papaioannou et al., 2020) at T0 and T1;
2. Frequency of moderate-to-vigorous PA is measured in days per week using a 2-item self-report scale* (Prochaska et al., 2001; Papaioannou et al., 2020) at T0 and T1;
3. Amount of moderate-to-vigorous PA in the leisure time is measured in hours per week using a single-item self-report instrument* (Booth et al., 2001; Papaioannou et al., 2020) at T0 and T1;
4. Extracurricular out-of-school training with a coach or instructor is measured in times per week using a single-item self-report instrument* (Item approved in February 2021 by the Ethics Committee of the Free University of Bozen-Bolzano, Italy) at T0 and T1;
5. Extracurricular in-school training is measured in days per week using a single-item self-report instrument* (Item approved in February 2021 by the Ethics Committee of the Free University of Bozen-Bolzano, Italy) at T0 and T1;
6. PA at school, PA outside of school, and sedentary behaviours are measured using a 15-item self-report scale (Youth Activity Profile, YAP; Saint-Maurice & Welk, 2015; Papaioannou et al., 2020) at T0 and T1.

Students' approach to PA:
1. Perceived motivational climate in PE is measured using a 12-item self-report scale (two sub-scales of six items each taken from the Motivational Climate in Physical Education; Papaioannou et al., 2007; Papaioannou et al., 2020) at T0 and T1;
2. Basic psychological needs satisfaction is measured using a 15-item self-report scale adapted for PE (Basic Psychological Needs Satisfaction Questionnaire, BPNS-Q; Standage et al., 2005; McAuley et al., 1989; Richer & Vallerand, 1998; Papaioannou et al., 2020) at T0 and T1;
3. Behavioural regulation of motivation towards PE classes is measured using a 20-item self-report scale (Behavioural Regulation in Exercise Questionnaire-2, BREQ-2; Lonsdale et al., 2008; Papaioannou et al., 2020) at T0 and T1;
4. Achievement goals in PE are measured using a 13-item self-report scale (Sport Goal Orientation Scale, adapted for PE; Duda & Nicholls, 1992; Papaioannou et al., 2020) at T0 and T1;

5. Enjoyment in PE is measured using a 12-item self-report scale (Physical Activity Enjoyment Scale, PACES, adapted from PE; Motl et al., 2001; Carraro et al., 2008; Carraro et al., 2014; Papaioannou et al., 2020) at T0 and T1;
6. Intention to practice physical exercise/sport in the leisure time is measured using a 3-item self-report scale* (Standage et al., 2003; Papaioannou et al., 2020) at T0 and T1.
7. Perceived behavioural control regarding physical exercise/sport in the leisure time is measured using a 3-item self-report scale* (Hagger et al., 2009; Papaioannou et al., 2020) at T0 and T1;
8. Attitudes towards PA/sport in the leisure time are measured using a 4-item self-report scale* (Hagger et al., 2009; Papaioannou et al., 2020) at T0 and T1;
9. Social support from friends and family towards participation in out-of-school PA is measured using a 8-item self-report questionnaire (8-item scale* – Dewar et al., 2013; Papaioannou et al., 2020) at T0 and T1;
10. Action planning of out-of-school PA is measured using a 5-item self-report questionnaire (Physical Activity Planning Scale; Dombrowski & Luszczynka, 2009; Papaioannou et al., 2020) at T0 and T1;
11. Self-monitoring is measured using a 4-item self-report scale (Perceived Self-regulatory Processes; Sniehotta et al., 2005; Theodosiou & Papaioannou, 2006; Papaioannou et al., 2020) at T0 and T1;
12. Subjective vitality is measured using a 5-item self-report scale (Subjective Vitality Scale; Ryan & Frederick, 1997; Papaioannou et al., 2020) at T0 and T1.

PE teachers' approach to PA promotion:
1. Self-efficacy in promoting out-of-school PA is measured using a 4-item self-report scale (a sub-scale taken from a teachers' self-efficacy questionnaire; Gorozidis & Papaioannou, 2011; Maltagliati et al. 2021) at T0 and T1;
2. Self-efficacy in creating a positive motivational climate in PE is measured using a 4-item self-report scale (a sub-scale taken from a teachers' self-efficacy questionnaire; Gorozidis & Papaioannou, 2011) at T0 and T1;
3. Self-determined motivation in promoting students' out-of-school PA is measured using a 15-item self-report scale (Work Tasks Motivation Scale for Teachers, WTMST; Fernet et al., 2008; Maltagliati et al., 2021) at T0 and T1;
4. Interpersonal behaviour in PE is measured using a 24-item self-report scale (Interpersonal Behavior Questionnare, IBQ; Rocchi et al., 2018) at T0 and T1;
5. Intention to promote students' out-of-school PA is measured using a 3-item self-report scale* (Aizen, 2002; Gorozidis & Papaioannou, 2011; Maltagliati et al., 2021) at T0 and T1;
6. Behaviours to promote students' out-of-school PA are measured using a 3-item self-report questionnaire* (Gobbi et al., 2020; Maltagliati et al., 2021) at T0 and T1;
7. Pedagogical formats and feedback to promote students' out-of-school PA are measured using a 13-item self-report scale* (Gobbi et al., 2020; Maltagliati et al., 2021) at T0 and T1.
*Note. Where not reported, a specific name for the scale has not been provided in the scientific literature.

Key secondary outcome(s)

For all the following variables Time 0 (T0) refers to data collected at the beginning of the project (i.e., between September and November 2021), and Time 1 (T1) refers to data collected at the end of the project (i.e., between May and July 2022).

Students' physical fitness:
1. Submaximal level of functional exercise capacity is measured using the 6-minute Walking Test, 6MWT; Geiger et al., 2007) at T0 and T1;
2. Musculoskeletal fitness is measured using the handgrip and the standing long jump tests

(ALPHA health-related fitness test battery, Garzón, 2009; Ruiz et al., 2011; Watanabe et al., 2011) at T0 and T1.

PE teachers' work engagement:
1. Work engagement of PE teachers is measured using a self-report questionnaire (Utrecht Work Engagement Scale, UWES, 9 items; Schaufeli et al., 2004; Gobbi et al., 2020; Maltagliati et al., 2021) at T0 and T1.

Completion date
30/07/2023

Eligibility

Key inclusion criteria
The study involves a sample of secondary school Physical Education (PE) teachers and a part of their classrooms.

The inclusion criteria for PE teachers are:
1. To be in service teachers in lower and upper secondary schools;
2. To teach in the same classrooms during all the 2021/22 school year;
3. To participate in the project with 3-to-5 of their PE classrooms;
4. To return the signed informed consent.

The inclusion criteria for students are:
1. To be lower or upper secondary schools student (age range between 11 and 19 years old);
2. To be a student of one of the teachers involved in the project;
3. To return the signed informed consent. In case of minors, the document has To be signed by a parent/legal guardian.

Participant type(s)
Other

Healthy volunteers allowed
No

Age group
Mixed

Sex
All

Total final enrolment
5201

Key exclusion criteria
PE teachers and students' not meeting the inclusion criteria. No other exclusion criteria are foreseen.

Date of first enrolment
13/09/2021

Date of final enrolment
16/10/2021

Locations

Countries of recruitment
Italy

Study participating centre
USR Marche
via XXV Aprile, 19
Ancona
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60125

Sponsor information

Organisation
Free University of Bozen-Bolzano

ROR
https://ror.org/012ajp527

Funder(s)

Funder type
University/education

Funder Name
Libera Università di Bolzano

Alternative Name(s)
Free University of Bozen-Bolzano, Freie Universität Bozen, UNIBZ

Funding Body Type
Private sector organisation

Funding Body Subtype
Universities (academic only)

Location
Italy

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Other publications	The role of physical activity in modulating six-minute walk distance in adolescents	17/03/2026	31/03/2026	Yes	No