Journal of Research in Applied and Basic Medical Sciences 2025; 11(2): 125-138

Original Article

RABMS Journal of Research in Applied and Basic Medical Sciences

Autonomy-supportive physical education, harmonious passion, and mental health in adolescent girls during COVID-19

Solmaz Babaei Bonab[1*], Masoumeh Parvaneh[2]

[1] *Associate Professor, Department of Sports Sciences, Faculty of Humanities, University of Maragheh, Maragheh, Iran*

[2] *PhD in Motor Behavior, Faculty of Sports Science, Urmia University, Urmia, Iran*

***Corresponding author:** Solmaz Babaei Bonab, **Address:** Department of Sports Sciences, Faculty of Humanities, University of Maragheh, Maragheh, Iran, **Email:** s.babaei@maragheh.ac.ir, **Tel:** +09143215066

Abstract

***Background & Aims*:** A crucial issue for the health of children and adolescents is understanding how to boost their level of physical activity during the COVID-19 outbreak. The pandemic has limited opportunities for engaging in physical activity, even for activities that students find enjoyable.

***Materials & Methods*:** This study investigates students' autonomy in sports to foster harmonious passion for physical activity and mental health. Self-determination theory was used as the theoretical framework. A total of 236 female students (Mage = 15.36) participated in a 16-week research project. Samples were randomly divided into an autonomy-support group and a control group.

***Results*:** The results showed that the experimental group had more harmonious passion ($p < 0.05$). They also reported more physical activity, less loneliness, and greater mental vitality ($p < 0.05$).

***Conclusion*:** Physical education based on autonomy support during the COVID-19 pandemic was effective in fostering harmonious passion for physical activity and reducing the negative psychological consequences of virus outbreaks.

***Keywords*:** Autonomy-support, Dualistic model of passion, Loneliness, Subjective vitality, Corona virus

Received 05 November 2024; accepted for publication 04 February 2025

Introduction

The COVID-19 pandemic has led the government to implement disease control actions such as school closures, social distancing, and lockdowns, which have affected humans' daily activities, especially those of children and adolescents (1). Children and adolescents were physically separated from their peers, teachers, and community networks (1), and it appears that a significant amount of anxiety, anger, and grief was visible during isolation (2). Preliminary evidence suggests that the social constraints aimed at reducing COVID-19 prevalence increase a wide range of psychological problems, including depression, anxiety (3, 4), loneliness, and rumination of thoughts (4, 5), and decrease physical activity opportunities for children and adolescents. Therefore, in these stressful situations, it is important to provide psychological interventions to cope with social isolation and help restore daily activities (6), as well as maintain students' motivation toward physical activity.

Research has shown that when social contexts support students' self-determination, it results in better

performance and motivation than non-supportive environments (7, 8). Thus, in the present study, we used self-determination theory (9) to encourage and develop students' desire to engage in physical activity, reduce the negative psychological factors associated with social isolation during the COVID-19 pandemic, and increase students' subjective vitality. Motivation for physical activity is a key factor for persistence and adherence (10). To help understand the effect of motivation on adherence to physical activity, self-determination theory (9, 11) has been used as a motivational model.

Self-determination theory is a theory of human motivation and personality that has received experimental support in the physical education domain (12, 13). Based on SDT, three basic psychological needs (BPN) are essential for growth and well-being (11). According to SDT, when people feel that social contexts (e.g., teachers, coaches) support their autonomy, they are more intrinsically motivated to engage in activities, resulting in positive outcomes. Through autonomy support, the student realizes that they have more control over their activities, which strengthens their sense of independence and intrinsic motivation (14). In contrast, a lack of autonomy support suppresses students' psychological needs and is associated with external regulation and lower levels of physical activity (15).

In the field of physical education, students' passion for activity may be associated with their consistency in that activity, well-being, and positive factors (16, 17). According to Vallerand et al., the more an individual's needs are met during an activity, the more valuable that activity becomes, leading to a harmonious passion for it. Passion can be defined as a strong desire for an activity that people enjoy, find important, and dedicate a lot of time and energy to (18).

The dual model of passion shows a close relationship between the two forms of passion—autonomous and controlled motivation. If behaviors are regulated by autonomous motivation, they will have independent internalization, meaning the behavior is regulated by internal reasons, forming a harmonious passion. In contrast, if behaviors are regulated by controlled motivation, meaning the behavior is regulated by external reasons, they are subject to controlled internalization, leading to the formation of obsessive passion (19).

Autonomy-supportive teachers should foster harmonious feelings by creating an atmosphere for exploration and choice, where children can freely acknowledge the importance of the activity (20). For example, Bonville-Rossi et al. (2013) found that students who perceive their teachers as autonomy-supportive display higher levels of harmonious passion and perseverance in their activities. In contrast, when students considered their teacher controlling, they were more likely to develop an obsessive passion that could lead them to quit their activities (21). Mageau et al. found that supporting the autonomy of parents or adults (e.g., a mentor or teacher) significantly predicts harmonious passion among children and adolescents (20). Research shows that there is a relationship between the type of interest and emotional outcomes. HP has been shown to contribute to life satisfaction, flow, focus, and vitality (22, 23), as well as to coping strategies for dealing with problems (24, 25). OP, on the other hand, is associated with negative outcomes such as negative emotions related to shame and guilt, rumination of thoughts, interpersonal conflict, anxiety, and low self-esteem (22, 23).

Loneliness is a painful global psychological experience that has serious consequences for people's mental health (4). Numerous studies have shown the importance of investigating loneliness when analyzing the effects of the coronavirus (COVID-19) pandemic. These studies have clearly shown that loneliness has increased since the onset of the pandemic (1, 26). Those most at risk of experiencing loneliness due to the COVID-19 pandemic belong to certain groups, such as young people and those experiencing social isolation (26).

Subjective vitality

Subjective vitality is an inner feeling generally characterized by a sense of real vitality, energy, and passion for life (27). Subjective vitality is physical and mental energy that comes from self-direction, support,

autonomy, and intrinsic motivation. This energy is a powerful resource that helps individuals regulate purposeful actions (27, 28). People with high subjective vitality tend to engage in activities with motivation, alertness, and energy. In addition, they report greater participation in meaningful activities, better coping with stressful life events, and better mental health (29). From the perspective of self-determination (11, 28), psychological energy is an essential source of subjective vitality necessary for performing activities. When a person does something spontaneously, not only do they not feel tired or frustrated, but they also feel that their energy and strength have increased. Subjective vitality is significantly associated with autonomy support, effort, and satisfaction with basic psychological needs such as autonomy, competence, and relatedness (30), as well as with life satisfaction, positive emotions, and social and psychological well-being (31). Arsalan et al. found that subjective vitality reduces the negative effects of coronavirus anxiety on ruminative thoughts (5). Mental vitality and loneliness are closely related; however, there is limited evidence. Studies have shown a negative relationship between mental vitality and loneliness. For instance, a recent study found that higher loneliness predicts poor subjective vitality, and loneliness was found to mediate the relationship between stress and subjective vitality (32). During adolescence, adolescents do not have a stable mental state. The negative effects of the COVID-19 lockdown are more visible in girls than in boys, and girls have been found to have higher levels of depressive and anxiety symptoms than boys during the outbreak (33). Therefore, the findings of this study may indicate future public health strategies and support measures needed for adolescent girls affected by social quarantine and school closures.

Activity in a virtual environment helps reduce student participation while increasing procrastination behaviors and psychological distress. In the present study, along with the experience of basic psychological needs (autonomy support), our aim is to examine two types of passion—harmonious and obsessive—and their consequences during the COVID-19 pandemic. We examined the effect of a psychosocial intervention designed to encourage students to participate in online physical education classes during COVID-19. This intervention provides a framework in which students can perform activities that fulfill their needs, which in turn determines the type of individual interest (harmonious passion) for the activity. Therefore, the aim of this study was to evaluate the effectiveness of an autonomy-supportive training style versus a non-autonomy-supportive training style in positively affecting harmonious passion, physical activity, mental vitality, and loneliness in adolescent girls.

Materials & Methods

Participants and Procedures

The participants were 236 high school girls between the ages of 14 and 18 (Mage = 15.36, SD = 0.68) who participated in the study during the COVID-19 pandemic in northwest Iran. Using the cluster sampling method, two high schools were selected from among six high schools. Then, from these two high schools, using the Cochran sample size determination formula, the minimum sample size was determined to be 248. Since our sample size was N = 236, we found that we had enough statistical power to test our hypotheses. In this study, we applied a controlled randomized design in which teachers and their students were divided into experimental and control groups. We created two groups in the WhatsApp mobile application—one group for all participants in the experimental condition and one group for all participants in the control condition. Then, 256 participants who were eligible and agreed to attend the study were allocated to the conditions (experimental condition, n = 128; control condition, n = 128). Additionally, two teachers were assigned to the control and experimental conditions. The intervention was then presented only to students of teachers assigned to the experimental condition (Table 1). Before starting, to inform and create a better understanding of the intervention program, the teachers received necessary training about the program during an online briefing session. The teacher in the experimental condition was asked to implement the intervention (experimental

section - Table 1) in her classroom. The teacher in the control condition was asked to present the training program to her classes according to the instructions provided (control section - Table 1). The complete research conditions were explained to the teachers in both groups (control and experimental), and students were informed that the purpose of the study was to assess their psychological status during the COVID-19 outbreak. Parental consent was obtained for students' participation in the study, and we assured parents that their children's responses would remain strictly confidential and that the research results would be published in the form of general and group information. The inclusion criteria were physical health and the ability to perform physical activity, no history of mental illness, an age range of 14-18, and student enrollment. The exclusion criteria included psychological symptoms such as depression and psychological distress, COVID-19 infection, and/or prior experience attending a similar exercise program (as implemented in this study).

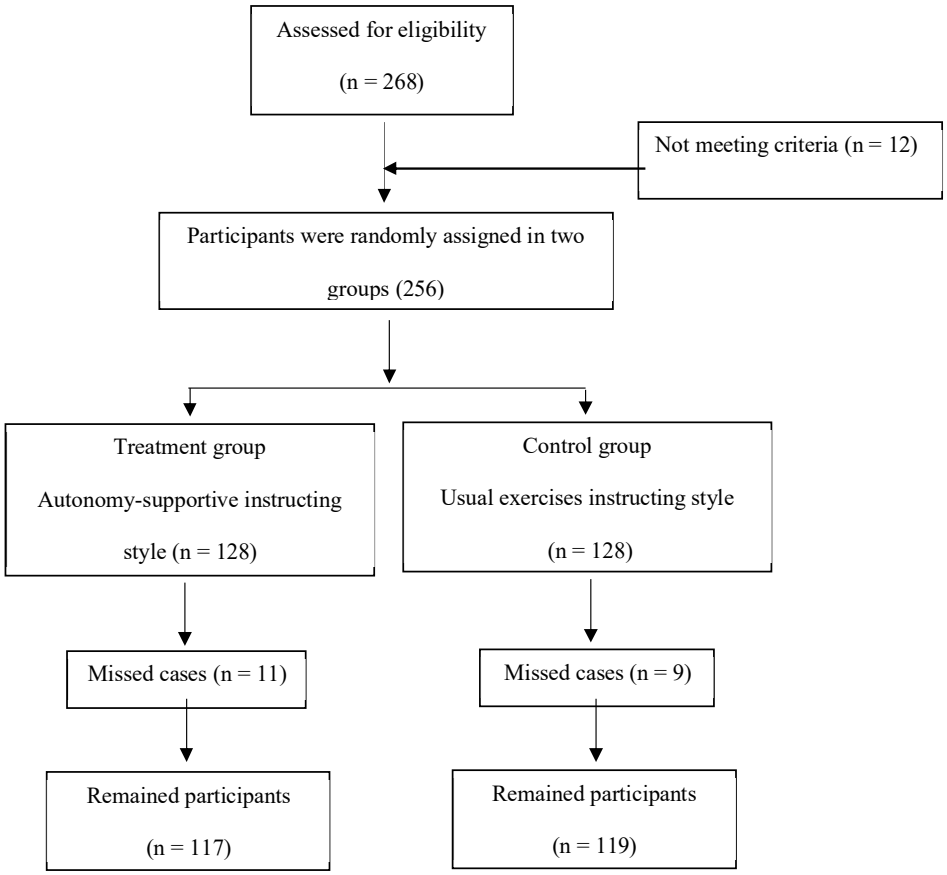

Fig. 1. Participants' flow chart

Participants completed research questionnaires (designed in Google Forms) in both the pre-test and post-test data collection stages (Passion, Physical Activity, Loneliness, Subjective Vitality). During one educational semester (16 weeks), the training program for both the intervention and control groups was presented by teachers during physical education hours (sports class) through the WhatsApp mobile application for participants to perform at home. The exercise drills used in our research included components of physical fitness related to cardiorespiratory fitness (e.g., step-ups, jumping jacks, rope jumping, stationary exercises),

increased cardiorespiratory fitness, and exercises related to muscle strength and endurance (e.g., Pilates with weights and elastic bands, sit-ups, and push-ups). The principles of exercise safety, exercise intensity, and movement execution (such as warming up and cooling down) were designed by an expert in the form of electronic educational content and presented to the participants. Along with the training programs, participants in the experimental setting received an autonomy-supportive guidance style. This means that in the experimental condition, the teacher acted according to a teaching style that supports autonomy (Table 1). This instruction was based on previous research in the field of physical activity (6, 34, 35). The goal of creating an atmosphere of autonomy support in this study was to satisfy students' need for autonomy in order to foster harmonious passion for physical activity and mental health. For example, the teacher gave students the freedom to choose the sequence of exercises during a training session (including the selection of both components or sets of components), asked participants for their views on how to perform the exercises, supported their decisions, used non-controlling language regarding participants' exercises, and provided positive feedback on participants' performance. In the control condition, the teacher offered classroom exercise programs in the form of a routine exercise plan (Table 1) that included warm-up, training, and practice components. The teacher determined the sequence of exercises during each training session, used a controlling language, and required students to follow the training and practice according to the teacher's instructions. After a 16-week semester, all participants took a post-test, and their scores were recorded for statistical analysis. The Research Ethics Committee of the Sport Sciences Research Institute approved the study protocol (SSRI.REC-2109-1237).

Table 1. Instructions in the experimental and the control groups

Groups	Instructions	Sample instructions
Experimental	Provide choice	The teacher gives students the right to choose and make decisions about how to perform the exercises (sequence of exercises). The teacher supports the allotted time for exercise (warm-up, cool-down, main exercise) and organizes activities according to the students' preferences. For example, the teacher provides general strategies for engaging in sports activities, encourages students to participate in purposeful sports activities, and asks them to plan for exercising, even if they have limited time or can only do so on weekends.
	Providing positive feedback	The teacher provides logical reasons for the importance of exercising, especially during COVID-19 (e.g., the benefits of exercise on mental and physical health). When students feel tired, the teacher offers positive feedback on their abilities in exercising.
	Talking through an informative and encouraging language	The teacher uses indirect language to guide students, encouraging them to continue practicing and participating in exercise sessions by using positive phrases (e.g., "You can..." instead of "You have to..."). The teacher simply asks students "what they want" rather than telling them" what and how to do it".
	Employing students' approach in classroom	The teacher listens to the students' opinions, spends time talking to them, and builds a good relationship with them (rapport). The teacher respects students as autonomous and self-determined individuals, asks for their suggestions on when they want to start and end practice sessions, when they would like to play, and how they prefer to do the exercises.

Groups	Instructions	Sample instructions
Control	The usual practice design	The teacher introduces the classroom activities in a usual practice design, which includes starting with a warm-up and then teaching and practicing each of the exercise components. The teacher tries to control the students' attendance in all sessions (both in the presence and absence of control), and the students are required to do all the exercises as the teacher instructs. Students must follow the directions provided by the teacher and focus on repeating the practices introduced by the teacher.
	Verbal communication	The teacher uses verbal communication to enable students to quickly understand how they should perform the exercises. The teacher uses controlling language in teaching and practice. The teacher also corrects students who are less active and less involved, using phrases such as, "Now is the time to practice and do the activity, not play or waste time."
	Provide rewards	The teacher uses rewards to motivate students. Additionally, when students provide the right answers and act according to the teacher's directions, the teacher encourages them by giving high scores. The teacher also uses low scores as a form of punishment when students do not follow his directions.

Measures

Autonomy-Supportive Environment: Perceptions of learners' autonomy-supportive environment were assessed by the coach using a valid scale employed in previous studies (36). The validity of this scale has been reviewed and confirmed in earlier studies. To measure the coach's autonomy-supportive behaviors, 6 items were used (such as "I feel that the coach provides me with opportunities and conditions for choice in this sport" and "I feel the coach understands me..."). In this scale, the participants were asked to demonstrate their agreement with the items on a scale from 1 (strongly disagree) to 7 (strongly agree). This scale also has acceptable validity. Cronbach's alpha coefficient for autonomy support has been reported as 0.67.

Passion: To measure passion for physical activity, we used the Passion for Activity Questionnaire (18), which has been modified for sports activity. The questionnaire consists of two parts. The first part measures students' passion and assesses the extent to which they feel passion for the activity (for example, "This activity inspires passion in me"). The second part of the questionnaire includes two subscales of six questions: harmonious passion (for example, "This activity is in harmony with other activities in my life") and obsessive passion (for example, "I have an extreme interest in this activity"). Answers are rated on a seven-point scale from 1 (strongly disagree) to 7 (strongly agree). Acceptable internal reliability of the Passion Questionnaire has been reported in the Iranian students' community sample (37).

Physical Activity: The International Physical Activity Questionnaire (IPAQ-short form) was used to assess physical activity (38). This questionnaire consists of seven questions in three parts: intense activity, moderate activity, and walking during the last 7 days. In terms of intensity, duration, and repetition, participants completed it as a self-report. According to the IPAQ questionnaire scoring protocol, the amount of physical activity of a person is calculated and reported as follows: total physical activity in the last week in terms of MET-min/week. The amount of one MET is approximately equal to the amount of energy consumed by a person at rest. According to the questionnaire, walking is 3 METs, moderate physical activity is 4 METs, and intense physical activity is 8 METs. The total physical activity score was calculated using the formula [8 (intense activity) + 4 (moderate activity) + 3 (low activity)]. This scale has acceptable internal reliability in the Iranian sample.

Loneliness: Loneliness was assessed by the Loneliness Feeling Scale (UCLA) (39). The scale was scored on 4 Likert values, from "I never feel this way" (1) to "I often feel this way" (4). Questions include: (1) "Do you feel comfortable with the people around you?" (5) "Do you feel like being part of a group of friends?" (6) "Do you feel you have a lot in common with people around you?" (9) "Do you feel comfortable with others?" (10) "Do you feel close to people?" (15) "Do you feel that you have someone to talk to whenever you want?" (16) "Do you feel that there are people who really understand you?" (19) "Do you feel that there are people you can talk to?" and (20) "Do you feel that there are people you may turn to?" These items are reverse-scored. The range of scores is between 20 (minimum) and 80 (maximum). Therefore, the average score is 50. A score above the average indicates a greater intensity of loneliness. This scale has acceptable internal reliability in the Iranian sample.

Subjective Vitality: To measure subjective vitality, the Subjective Vitality Scale (21), which consists of seven items, was used. All items are scored on a 5-point Likert scale, ranging from strongly disagree (1) to strongly agree (7). Research has reported the reliability of this scale in the Iranian sample as 0.89, indicating that the questionnaire has acceptable internal reliability.

Data Analysis: Data analysis was performed using SPSS software version 23. Descriptive statistics, including mean and standard deviation, were used to describe the research variables in both conditions (autonomy-support) and control (without autonomy: conventional training). Graphs for each variable are reported in the results section. To evaluate the effect of the supportive-autonomy intervention on the research variables, multivariate analysis of covariance (MANCOVA) was performed. A *P-value* of less than 0.05 was considered significant.

Results

Descriptive statistics for both conditions (pre-test and post-test) are presented in Table 2. There were no significant differences in any research variables between groups in the pretest ($P \geq 0.05$). Therefore, the study groups had similar conditions before training.

Table 2. Descriptive statistics in both conditions in the sessions before and after the test

	Intervention (autonomy-support)		**Control (usual)**	
	Pre-test	Post-test	Pre-test	Post-test
	M (41)	M (41)	M (41)	M (41)
Obsessive passion	16.85 (5.27)	9.68 (1.48)	16.38 (4.13)	22.73 (1.6)
Harmonious passion	9.91 (1.98)	36.69 (1.47)	9.96 (2.4)	11.88 (2.19)
Loneliness	71.41 (1.63)	33.14 (8.82)	71.26 (1.96)	61.87 (2.87)
Subjective vitality	15.33 (1)	35 (2.06)	15.65 (1.13)	22.34 (3.37)
Perceived autonomy-supportive behaviour	3.25 (0.76)	6.97 (0.05)	2.44 (.061)	2.79 (0.72)
Total physical activity	942.86 (250.10)	2968.84 (930.56)	1013.70 (243.88)	1031.70 (240.02)

According to the information in Table 2, the mean obsessive passion in the intervention group is lower than in the control group, while the mean harmonious passion in the intervention group is higher than in the control group. In addition, the mean physical activity in the intervention group is higher than in the control group. It can also be seen that the autonomy-support group had a lower average level of loneliness and a higher average level of subjective vitality compared to the control group. Perceived autonomy-supportive behavior was also higher in the intervention group than in the control group.

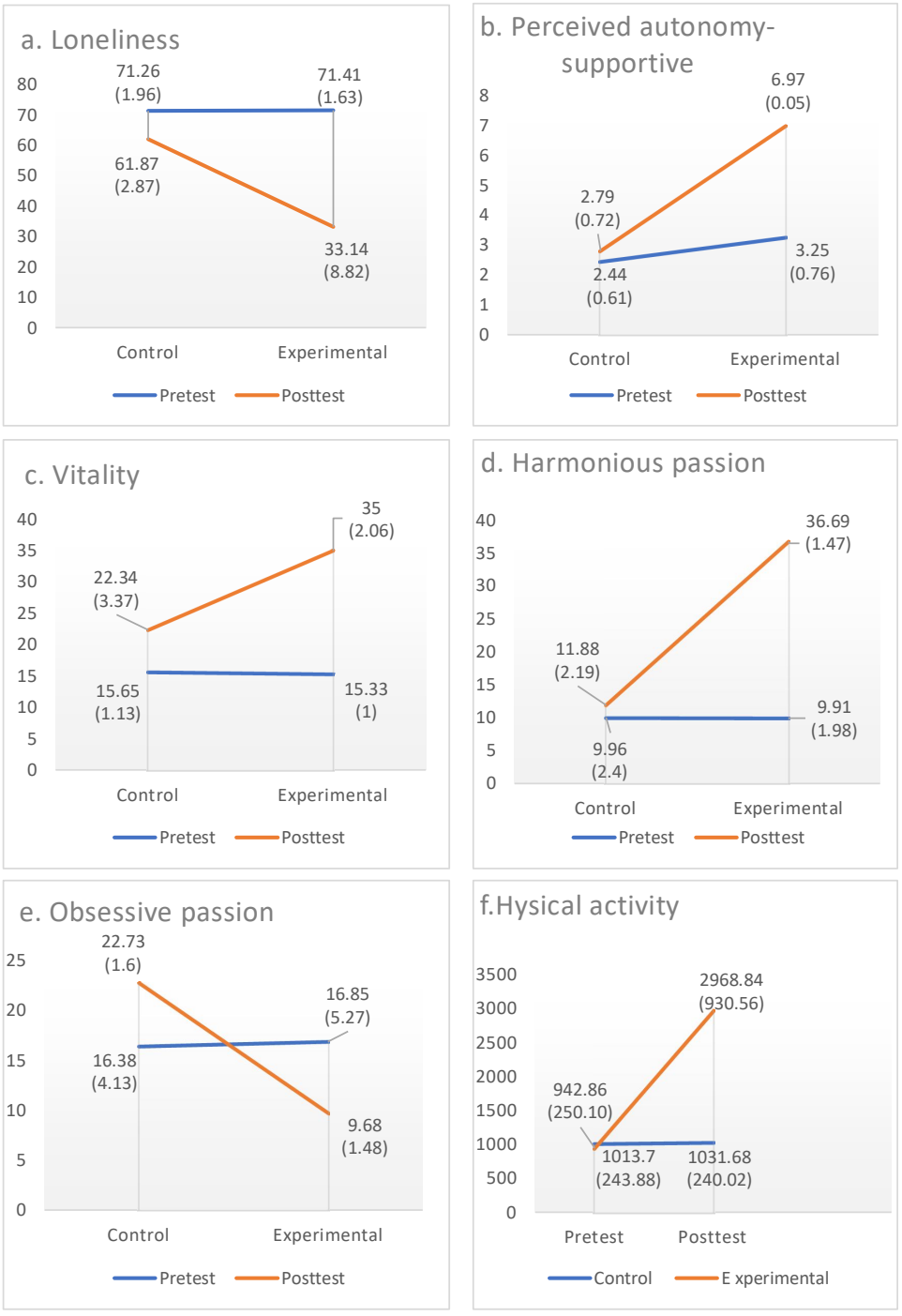

Fig. 2. Participants' experience of an autonomy-supportive Environment: changes in loneliness (a), perceived autonomy-supportive (b), vitality (c), harmonious passion (d), obsessive passion (e), and physical activity (f). Note. Numbers within parentheses are standard errors

Table 3. Results of the multivariate analysis of covariance to evaluate the effect of the intervention on the evaluated indicators

Dependent variables	Sum of squares	Degrees of freedom	Mean square	(ANOVA) F	*P-value*	Effect size
OP	9821.73	1	9821.73	4070.77	0.001	0.947
HP	351977.47	1	351977.47	10105.35	0.001	0.978
Loneliness	46957.05	1	46957.05	1096.78	0.001	0.827
Subjective vitality	9148.54	1	9148.54	1074.64	0.001	0.824
Perceived autonomy-supportive behaviour	94.145	1	94.145	345.5	0.001	0.93
Total physical activity	14003360.629	1	14003360.629	14.604	0.001	0.732

MANCOVA analysis was performed to examine the difference between the two groups with pre-test scores as an auxiliary variable. The results ($P \geq 0.05$) for homogeneity of variance and homogeneity of regression slopes confirmed that the assumptions for MANCOVA were met. The results showed a significant difference in obsessive passion (eta coefficient = 0.947, F = 4070.77, $p = 0.001$) and harmonious passion (eta coefficient = 0.978, F = 10105.35, $p = 0.001$) in the post-test between the intervention and control conditions. There was also a significant difference in loneliness (eta coefficient = 0.827, F = 1096.78, $p = 0.001$), subjective vitality (eta coefficient = 0.824, F = 1074.64, $p = 0.001$), perceived autonomy-supportive behavior (eta coefficient = 0.93, F = 345.5, $p = 0.001$), and physical activity (eta coefficient = 0.732, F = 14.604, $p = 0.001$) in the post-test between the intervention and control conditions (Table 3). Thus, the autonomy-supportive intervention was more effective than the conventional training group.

Discussion

Helping to meet the basic psychological needs of students is an important element in creating a passion for physical activity, coping with their feelings of loneliness, and enhancing vitality. Therefore, in this study, our goal was to use a training method that facilitates the experience of meeting basic psychological needs during the coronavirus outbreak, when students had to engage in physical activity at home and were away from appropriate motivational conditions. To achieve this goal, we conducted an intervention in accordance with the recommendations of SDT (9). The results showed that students' autonomy support increased harmonious passion and physical activity in the experimental conditions. The results also indicated that, in experimental conditions, students reported less loneliness and more vitality. These findings are consistent with the SDT proposal (9) and the dualistic model of passion (18). This means that the basic needs listed in SDT (autonomy, competence, and relatedness) are critical to continuing and excelling in sports, and when these needs are met, the likelihood of maintaining a passion for sports increases (18). The present study is an important step in revealing the underlying processes of consistent passion as well as fostering positive emotions in students during the coronavirus pandemic. The results showed that harmonious passion increased from pre-test to post-test in experimental conditions, highlighting that the quality of the social environment is one of the factors that differentiate individuals with harmonious passion from those with obsessive passion (20, 39). As previous research has shown, adults who support children's independence create favorable conditions for children's activities, allowing them to act freely, express their creativity, and experience positive emotional outcomes (40, 41, 42). According to previous studies (21, 43), students' perceptions of an autonomy-supportive environment are positively correlated with harmonious passion, which in turn is related to self-determined motivation. The results of Castillo et al.'s research confirm that an autonomy-supportive environment is beneficial for fostering harmonious

passion in students and leads to positive and desirable outcomes, such as a greater intention to continue physical activity (43). Additionally, during the coronavirus pandemic, it has been shown that individuals who perceive their basic psychological needs as more satisfied exhibit higher levels of physical activity and lower levels of anxiety (44). In the field of sports, the research findings of Yang et al. indicate that perceived autonomy support has a positive effect on intrinsic motivation and harmonious passion, which aligns with our research results (45). Therefore, in the current stressful situation, where maintaining students' motivation to engage in physical activity and support their mental health is crucial, providing students with greater independence in their activities can help strengthen their intrinsic motivation.

Previous research on passion has shown that passion is consistently correlated with positive psychological well-being indicators and leads to life satisfaction. In contrast, obsessive passion (OP) increases anxiety and depression and has no significant relationship with vitality (23, 37). These findings are consistent with the results of the present study. Research has also shown that harmonious passion is compatible with coping strategies such as dealing with a stressor (24, 25). Schellenberg et al. stated that harmonious passion leads to higher levels of physical and mental health and may also inhibit some of the negative effects of obsessive passion (46). Thus, autonomy is important not only for satisfying the basic needs of self-determination theory but also within the dualistic model of passion. In our study, harmonious passion acted as a coping strategy in stressful coronavirus-related situations and contributed to students' sense of vitality during social isolation.

In this study, people with higher levels of autonomy satisfaction had a more harmonious passion and engaged in higher levels of physical activity, which has several implications. Thus, with basic psychological needs resources available, students may develop a more harmonious passion and, in turn, a greater sense of confidence to engage in physical activity during periods of social isolation. According to the dualistic model, individuals with harmonious passion have the highest levels of physical health and psychological well-being, while OP does not promote well-being and reduces health (46). We also evaluated subjective vitality due to its crucial consequences. First, when a person feels energetic and enthusiastic while engaging in an activity, they are more likely to continue that activity (28). Second, higher subjective vitality is associated with sound physiological and immunological functioning (28). Third, greater vitality is linked to lower psychological distress and higher resilience in coping with stress (28). Additionally, we assessed feelings of loneliness in school students, as loneliness is a serious risk factor for healthy growth and development. Self-isolation and social distancing appear to be key contributors to the sharp increase in loneliness among adolescents. Loneliness has been shown to play an important role in subjective health and well-being. For example, feeling lonely is associated with depressive symptoms (47) and aggressive behaviors (48).

Generally, the current study shows that an autonomy- supportive practice approach in physical education classes helps to materialize the basic psychological needs of students and increases both harmonious passion and physical activity levels. During the difficult times of the COVID-19 pandemic, when training was conducted online and the environment was not conducive to physical activity and exercise, people were also forced to stay home and maintain social distance. Due to the anxiety caused by the coronavirus, some individuals may have engaged in strenuous and obsessive physical activity as a way to cope with isolation and anxiety, which in turn led to obsessive passion associated with negative emotions. Additionally, after the removal of restrictions in the post-pandemic period, people could still strive to meet their basic needs, which would help improve their well-being and reduce the negative feelings associated with isolation and stress. This research may also have implications for other social groups, such as the general public.

One of the limitations of our research was that we conducted the study on students who had at least 1 hour of physical education per week; therefore, all the

research samples were physically active. Thus, it is suggested that these findings be repeated with samples from different age groups who have no history of physical activity, such as the elderly population, young people, or employees, as well as academic samples, to test the international effectiveness of this intervention. It would also be interesting to test the applicability and generalizability of this intervention across different cultures.

Conclusion

This study highlights an encouraging approach to managing stressful situations. The coronavirus has psychologically affected all sections of society. These promising results suggest that students can participate in their activities, and regardless of the difficult situations, they will be more satisfied with doing sports and maintaining their mental health. Furthermore, by examining these findings, teachers and educators can understand the significance of creating favorable conditions and a social environment to foster harmonious passion for physical activity in difficult situations. It has been demonstrated that harmonious passion increases factors such as psychological well-being (e.g., subjective vitality) and prevents loneliness and seclusion.

Acknowledgments

The authors would like to express their gratitude to all those who contributed to the completion of this research.

Ethical statement

The research ethics committee of the Sport Sciences Research Institute approved the study protocol (SSRI.REC-2109-1237).

Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare no conflict of interest in relation to this study.

Funding/support

This research received no external funding.

Author contributions

None declared.

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