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PHYSICAL ACTIVITY ~~AS A MEANS~~ FOR A POSITIVE COPING DURING STRESSFUL SITUATIONS: AN ACTION RESEARCH

ATTIVITÀ FISICA COME STRUMENTO~~I~~ DI FRONTEGGIAMENTO POSITIVO DI SITUAZIONI STRESSANTI: UNA RICERCA AZIONE

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Abstract

COVID-19 restrictions negatively impacted physical activity levels and educational approaches. The education of the body is a crucial element for preadolescents' growth. This action research aimed at exploring associations between the discipline of the body due to the lockdown and physical activity levels.
The Italian version of the IPAQ-SF questionnaire was used to investigate physical activity levels pre- and post-intervention (12 weeks). The perception of the impact of lockdown on preadolescents' levels physical activity was assessed via focus-groups.
From the IPAQ administration emerged that pre-intervention, 45.5% of students were classified as very active, 35.8% sufficiently active, and 18.7% inactive. Post intervention 58.7% were very active, 33.9% sufficiently active, and 7.5% inactive.
Results of the focus-groups showed that students practicing self-conducted physical activity during lockdown had a positive coping of the negative effects of the lockdown.
As physical activity represents a useful strategy in helping youth coping with stressful situations and preventing detrimental effects of sedentary behaviors on preadolescents' emotional, social and cognitive skills development, there is the need to develop specific strategies for active lifestyles promotion.

Abstract in italiano

Le restrizioni legate al contrasto della diffusione del virus COVID-19 hanno avuto un impatto negativo sui livelli di attività fisica e sugli approcci educativi. L'educazione del corpo rappresenta un elemento cruciale per la crescita e lo sviluppo dei preadolescenti. La presente ricerca-azione ha come scopo quello di investigare possibili associazioni tra il disciplinamento dei corpi indotto dal lockdown e i livelli di attività fisica.
Il questionario IPAQ-SF è stato utilizzato per valutare i livelli di attività fisica prima e dopo l'intervento. La percezione dell'impatto del lockdown sui livelli di attività fisica nei preadolescenti è stata studiata attraverso dei focus-group.
Dai dati è emerso che prima dell'intervento il 45.5%, il 35.8 e il 18.7% degli studenti sono stati classificati come molto attivi, sufficientemente attivi e inattivi, rispettivamente. Post-intervento 58.7% erano molto attivi, 33.9% sufficientemente attivi, e 7.5% inattivi.
I focus-group hanno mostrato chi ha praticato attività fisica ha avuto un fronteggiamento positivo nei confronti dello stress indotto dalle restrizioni.
L'attività fisica rappresenta uno strumento valido per la gestione di situazioni stressanti nei preadolescenti e contribuisce a prevenire gli effetti negativi di stili di vita sedentari per ciò che concerne lo sviluppo di capacità emotive, sociali e cognitive; pertanto, si rende necessaria l'adozione di strategie di intervento atte a favorire l'adozione di stili di vita attivi.

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Preadolescents, physical activity, active lifestyle, education, body

preadolescenti, attività fisica, stili di vita attivi, educazione, corpo

Introduction

"Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity"(WHO, 1948).

Due to the widespread of the COVID-19 pandemic during the latest years (WHO, 2020) those health and wellbeing states have been compromised and the definition of wellbeing evolved to a more holistic approach, defining the wellbeing as *"a state of positive feelings and meeting full potential in the world. It can be measured subjectively and objectively using a salutogenic approach"* (Simons & Baldwin, 2021).

Effectively, for the Italian case, for contrasting the virus' diffusion since the autumn-winter season 2020, the government introduced a three-tiered restriction system coded as yellow, orange and red, based on the real-time epidemiological risk assessment (Manica et al., 2021). The colours were linked with specific restrictions related to food and drink delivery, use of the masks, possibility to attend public events, outdoor and indoor physical activity, possibility to attend the school in presence, etc.

Independently from the different forms of social restrictions, one of the priorities of the Government and Local Authorities during the different phases of the pandemic was to guarantee schools' activities. In Regions showing the worst epidemiological data (red zones) schools were closed and, to avoid a complete suspension of the teaching process, didactic was provided online (D.P.C.M. 02.03.2021, 2021). Consequently, schools were forced to make appropriate adaptations in order to continue delivering education and to sustain the continuation of the activities with the incorporation of technological resources and innovative teaching processes. The efficacy of online schooling has varied widely among students, depending on several factors such as computer skills, a stable internet connection, the support of the parents, the capacity of the teachers to adapt their teaching to an online format, etc. Nevertheless, this forced home confinement negatively impacted students' individual and social wellbeing states. Overall, difficulty in falling asleep, anxiety at bedtime, night awakenings, nightmares and sleep terrors were found in adolescents (Bruni et al., 2021) ~~-~~together with symptoms of loneliness, psychological distress, anger, irritability, boredom, fear (Panchal et al., 2021), or eating disorders (Robinson et al., 2021), as well as mental health issues, symptoms of social anxiety and depression, demotivation to remain physically active and engaged with peers (Nearchou et al., 2020).

Although many forms of alternative and enjoyable home-based workouts were proposed to counteract the detrimental effects of lockdown (Cortis et al., 2020; D~~d~~e Maio et al., 2022; Iannaccone et al., 2020), only a minority of students increased their physical activity levels during home- confinement. Adolescents who were overweight, obese or had poor prior physical activity habits reported a further reduction of the time spent in being physically active (Ng et al., 2020). Broadly, it has been observed (Fondazione Italia in Salute & Sociometrica, 2021) preadolescents and adolescents achieved lower levels of physical activity in comparison to the habits prior the COVID-19, with a significant decrease of the time dedicated to sport and physical activities and related negative impact on their mental health.

Recently, the World Health Organization issued an updated version of the guidelines for physical activity affirming that physical activity in children and adolescents is associated with

improvements in physical, mental, and cognitive health[1]. Indeed, sedentary lifestyles may lead to the onset of chronic health conditions involving fitness and cardiometabolic health, adiposity, social behaviors, or sleep. Therefore, to stay active, children and adolescents should achieve a minimum of 60 minutes/day of moderate-to-vigorous intensity aerobic exercise, in association to at least 3 sessions/ week of strength exercises (Bull et al., 2020).

In this context, schoolteachers should take in consideration the negative effects of social restrictions in order to adapt their teachings aiming to help students reconstructing their links with their bodies according to this new developed concepts of health, mental, emotional and physical wellbeing (Agosti et al., 2020).

Therefore, the scope of the present study was to investigate the impact of a program aimed to sensibilize preadolescents toward the adoption of active lifestyles and to "activate" the body to counteract the negative effects of lockdown.

Methods

Study design and selection of participants

For the present research an action research design (Trombetta & Rosiello, 2000) was adopted. The sample was composed by preadolescents attending a secondary school (age range 11-14) placed in Roccasecca (Italy). Data were collected prior the beginning of the intervention (160 students) and one week after the end of the implementation of the program (156 students) (Table 1).

Year of school	Participants PRE	Participants POST
First	69	65
Second	56	56
Third	35	35
Total	160	156

Table 1. Number of participants of the first (PRE) and second (POST) data collection, reported by year of school.

Due to privacy issues, no information regarding sex and age of participants were collected.

Intervention program

In the context of the "red zone", defined according to the three-tiered system adopted by the Italian government, the intervention was carried out online by the physical education teacher

[1] World Health Organization. Guidelines on physical activity and sedentary behaviour. https://apps.who.int/iris/bitstream/handle/10665/336656/9789240015128-eng.pdf?sequence=1&isAllowed=y (Retrieved on 2022-04-12)

from January to March 2021. To motivate the preadolescents toward the adoption of an active lifestyle, the physical education teacher adopted three instruments: the daily monitoring of steps through pedometers; motivational speeches regarding the healthy benefits of being physically active; specific classes promoting the tools for active lifestyle, as well as teaching regarding a better understanding of the personal body.

Physical activity level assessment

The short form of the Italian version of the International Physical Activity Questionnaire (IPAQ) (Mannocci et al., 2010) was used to assess the participants' physical activity levels before and after the intervention. This questionnaire allows to evaluate physical activity levels by asking participants questions regarding the frequency (days per week), duration (in hours and minutes) and level of intensity (walking, moderate and vigorous) of physical activity achieved during the previous seven days. According to the IPAQ scoring system, MET per week were estimated separately for walking (reported minutes · reported days · 3 MET for moderate speed/ 3.3 MET for vigorous speed/ 2.5 MET for slow speed), moderate (reported minutes · reported days · 4 MET) and vigorous intensity (reported minutes · reported days · 8 MET) activities and, subsequently, the overall sum of MET per week was calculated. Subsequently, as recommended from the IPAQ scoring protocol (Ainsworth et al., 2000), participants were classified as physically inactive (total MET: <700), sufficiently active (total MET: 700-2519), and active (total MET: >2520). The questionnaire was administered prior the beginning of the intervention (January 2021) and after the end of the intervention (March 2021).

Assessment of the impact of lockdown on preadolescents' lifestyles

The perceived impact of the lockdown on students' lifestyle, was investigated by means of four focus groups, involving 56 students. The group discussion focused on four themes: the evolution of social relationships before and after the pandemic outbreak; how those evolutions were perceived, and the personal strategies adopted to cope with the adverse effects of the restrictive measures; changes in leisure time with particular emphasis on the time dedicated to physical activity; the expectations for the future. In particular, for the coding system expressions such as "I tried to face the lockdown in a positive way, for istance, by spending more time in playing", or "I am happy because I have more resting time", or "My biggest change is that during this period I am always happy whereas before I was always sad" were classified as positive coping. Differently, expressions such as "I was sad and thoughtful", or "It was a bad period because I couldn't hang out with my friends and I had to celebrate my birthday at home.. It was a difficult period" were classified as negative coping reactions.

Data analysis

Descriptive statistics were calculated for all the investigated variables. To assess the changes in physical activity levels data were paired and a Sankey chart was created to illustrate the flow of the changes. Statistical investigations were performed with the Stata statistical software, version 15.1 (StataCorp, CollegeStation, USA).

For the analysis of data collected through the focus groups a qualitative approach was used. Data were investigated with the statistical software NVivo (Version 1.6). Firstly, data were analysed inductively and thematically using an open coding process (Charmaz, 2002; Strauss & Corbin, 1998) and, subsequently, the coding was compared and further refined with the literature review and the quantitative data through a deductive approach (Bernard & Ryan, 2010; Silverman, 2009).

Results

From the first IPAQ administration 18.7 % (n= 23) of participants resulted to be inactive, 35.8% (n= 44) sufficiently active, and 45.5% (n= 56) very active. Differently, post intervention a lower frequency (7.4%; n= 9) of inactive participants was found. Concerning the other classifications, 33.9% (n= 41) of students were sufficiently active and 58.7% (n= 71) very active. The distribution of students' physical activity levels is shown in Figure 1.

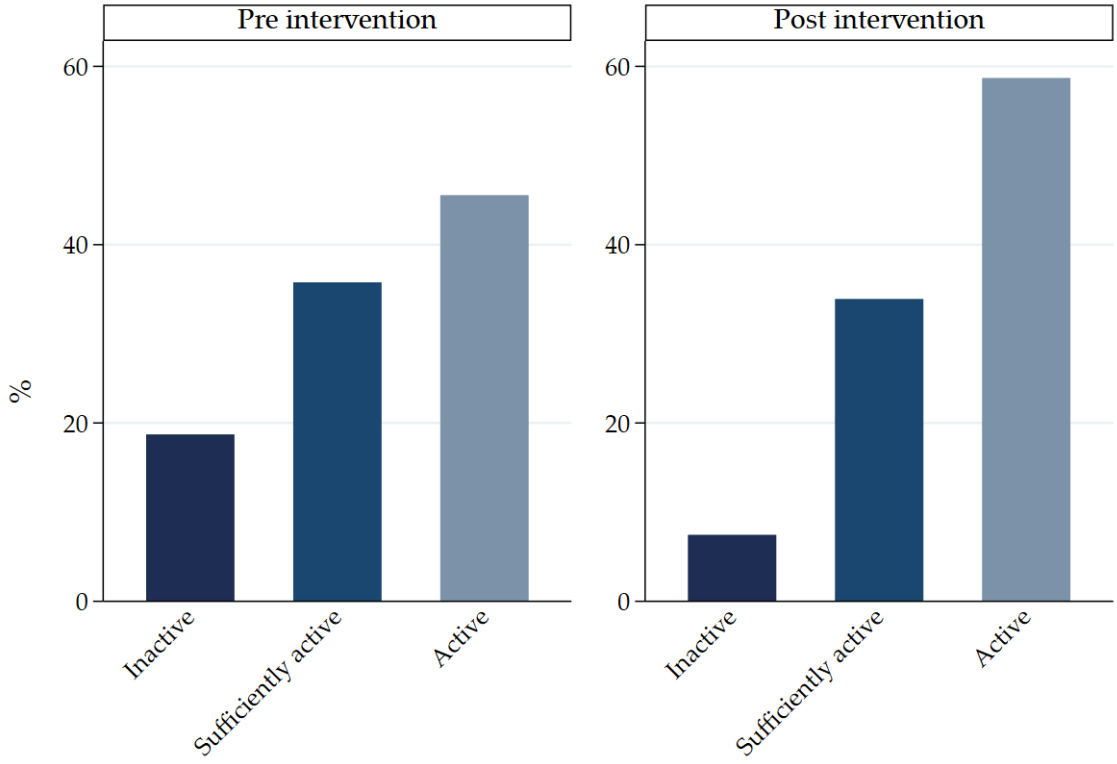

Figure 1. Distribution of students' physical levels classification, according to the IPAQ classification, before (pre) and after (post) intervention.

Subsequently, for a deeper understand of the changes in level of physical activity post intervention data were paired (n= 97). Results showed that the majority of students classified as inactive increased their physical activity levels to sufficiently active (n=7) and to very active (n=8). Among those classified as sufficiently active, 3 students became inactive, 12 kept their initial levels, whereas 20 increased their levels to very active.

Among the very active students, 2 students became inactive, 9 sufficiently active, whereas 34 kept their initial levels (Figure 2).

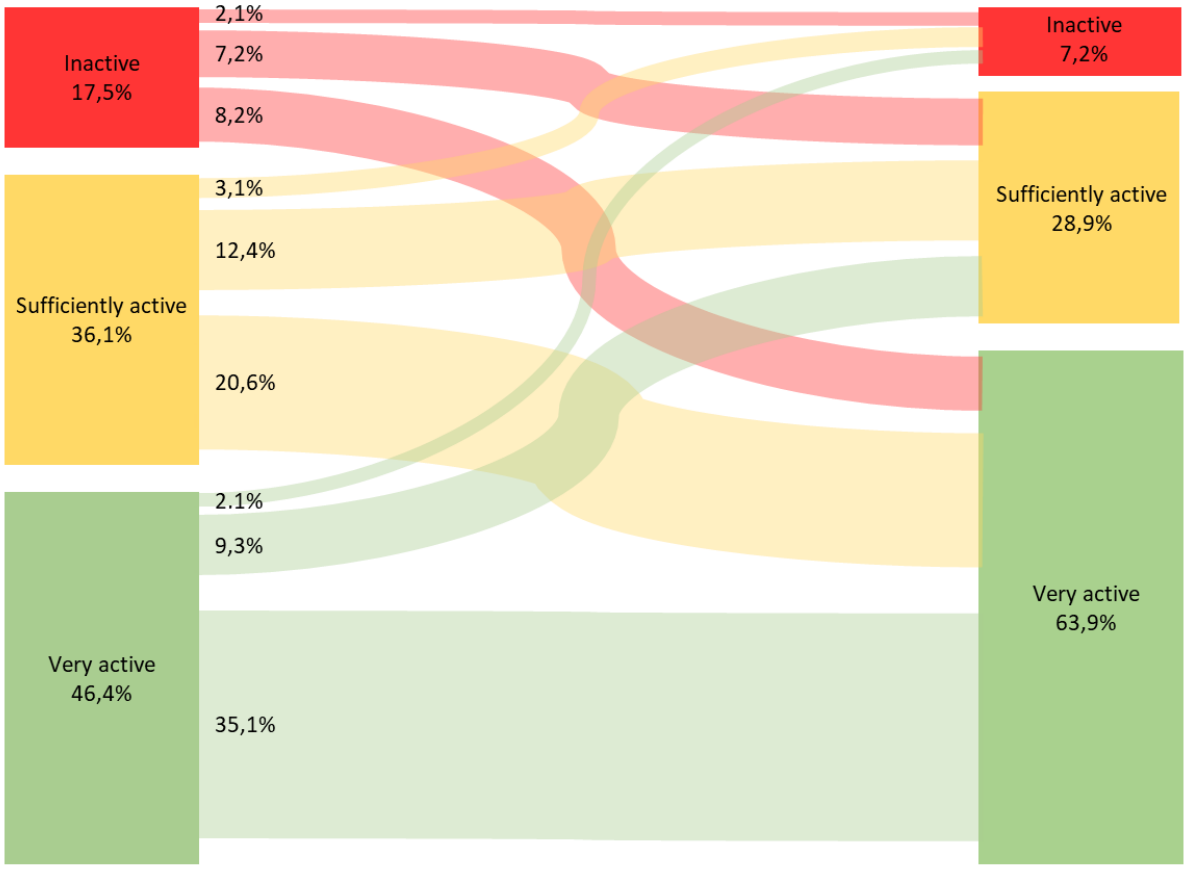

Figure 2. Flow chart of changes in physical activity levels before (left side) and after (right side) the intervention.

From the focus groups, it emerged that the majority (55%; n=15) of preadolescents' practicing self-conducted physical activity reported a positive coping to the stressful situation due to COVID-19 restrictions, differently from the majority (51.8%; n=14) of those spending time playing videogames, or watching TV, or using social networks who reported a negative coping (Figure 3).

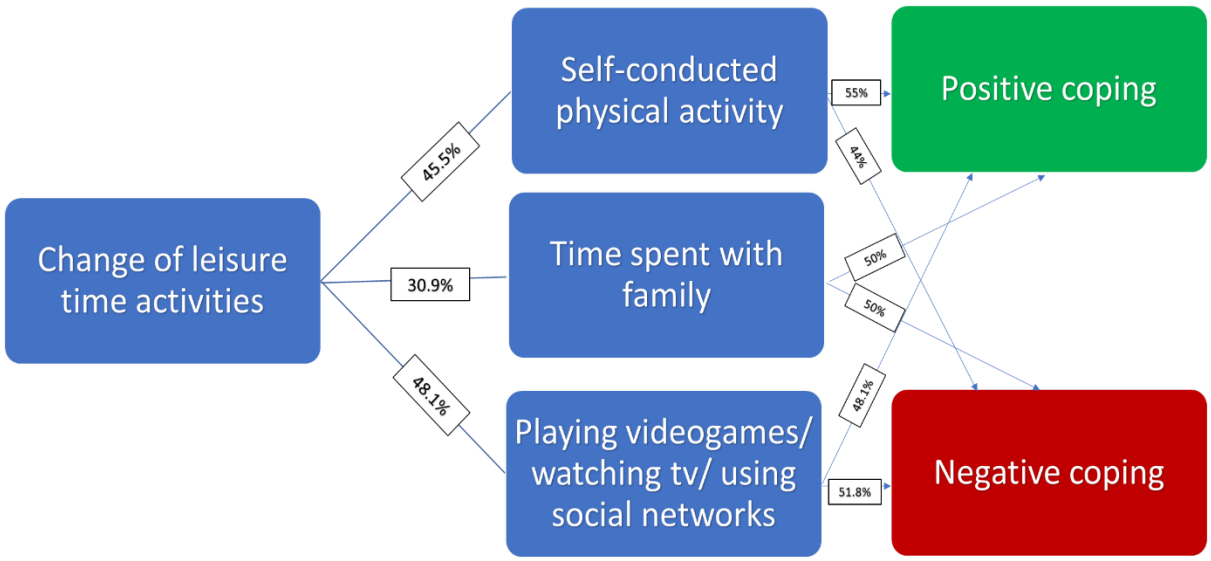

Figure 3. Flow chart of behaviors' changes during lockdown in relation the preadolescents' response.

Discussion

The current research aimed to investigate the effects of an intervention program aiming at~~i~~ sensibilizing preadolescents toward the adoption of active lifestyles and to use the body to counteract the detrimental socio-physiological effects of stressful circumstances, such as the lockdown.

The intervention was handled by the physical education teacher of Italian preadolescents from January 2021 to March 2021, during the lockdown due to the second wave of the COVID-19 pandemic.

As a result of the continued spreading of the pandemic, school activities continued to be delivered through distance learning in many Regions till June 2021, contributing to a significant change in students' bodies, as well as in fitness and sports habits.

From the current investigation it emerged that the restrictions imposed by the Italian government had a negative impact on preadolescents' lifestyles and bodies, leading to the creation of docile bodies (Digennaro, 2021b). In fact, unless the social restrictions with the isolation and the home confinement were identified as necessary preventive measures, the control that was implemented by the authorities on the individuals is similar to the model of discipline of the body that was described by Foucault (1995).

From the assessment of physical activity levels, results showed that prior the intervention participants reported low levels of physical activity, whereas after the intervention a decrease of inactive students with a consequent increase of very active students was observed.

Nevertheless, it is worth noting that students classified as sufficiently active and reporting to spend part of their leisure time in practicing self-conducted physical activity, were able to positively cope against negative effects of the lockdown. This outcome is particularly relevant as it places the individuals and their bodies dimensions in a central position.

The use of the body as a fundamental means of social interaction and the adoption of active lifestyles represents two essential components for the growth of individuals, in particular during the adolescence (Digennaro, 2021b). As a point of fact, from a healthy standpoint physical

activity is beneficial for physical fitness (cardiorespiratory and muscular fitness), cardiometabolic health (blood pressure, dyslipidemia, glucose and insulin resistance), bone health, cognitive outcomes (academic performance, executive function) and mental health (reduced symptoms of depression) (Bull et al., 2020). Furthermore, from an educational perspective, physical activity represents a valuable means to develop essential relational and cognitive skills (such as teamwork, inclusive practices, or fair play) contributing to the development of life skills fundamental for a correct growth and health maintenance (Pignato et al., 2019)(. Furthermore, learning how to manage the body in space and relate to people even under conditions of physical stress, represents a favourable condition for the educational and training processes (Ascione & Marzullo, 2021).

Nevertheless, a prolonged stress exposure might induce morphological changes dependent on the type of stressor experienced, since chronic restraint and social isolation lead to different neurobiological outcomes in the amygdala (Romeo, 2017). Given the plasticity of the neurocircuits controlling adult behaviors such as the corticolimbic system, or the reward system, stressful events during preadolescence may generate a risk of psychopathologies in adulthood (lo Iacono & Carola, 2018)-.

Conclusions

As demonstrated fromor the present action research, physical education represents a useful strategy in helping youth coping with stressful situations and preventing detrimental effects of sedentary behaviors on preadolescents' emotional, social, and cognitive skills development; therefore, there is the need to investigate the effects of lockdown on preadolescents' behaviors with the aim to develop specific strategies for active lifestyles promotion.

It is fundamental to recognize and understand the signs and symptoms of stress on the body of the preadolescents and be able to provide support when help is needed (Digennaro, 2021a). Special attention is given to the factors that influence the body perception and the habits in terms of physical activities: two critical aspects for the well-being and the quality of life.

Physical education represents a useful strategy in helping youth coping with stressful situations and preventing detrimental effects of sedentary behaviors on preadolescents' emotional, social, and cognitive skills development.

School activities should be refocused on the individual body, drawing the attention on its multidimensional nature by proposing activities involving movement, social relations, or emotional experiences while reconstructing the psychophysical wellbeing and limiting the marks left by the creation of docile bodies.

Future studies should investigate potential intervention aiming to stimulate inactive scholars toward the adoption of active behaviors such as walking challenges by using pedometers applications usable on personal devices.

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