International Journal for Innovative Engineering and Management Research
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IJIEMR Transactions, online available on 08th Feb 2022. Link :http://www.ijiemr.org/downloads.php?vol=Volume-11&issue=ISSUE-02

DOI: 10.48047/IJIEMR/V11/I02/06

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Volume 11, Issue 02, Pages: 48-56

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International Journal for Innovative Engineering and Management Research
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EFFECT OF COVID 19 AND IT'S INFLUENCE ON PHYSICAL EDUCATION

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ABSTRACT

It is well known that physical inactivity increases the risk of global death; however, the impact of the corona virus disease 2019 (COVID-19) lockdown strategy on physical activity (PA) remains unclear. This study compared PA—i.e., daily occupation, transportation to and from daily occupation, leisure time activities, and regular sporting activities—prior (PRE) and during (POST) the on-going COVID-19 outbreak in the Greece lockdown environment. A Greek version of the web-based Active-Q questionnaire was used to access PA. The questionnaire was filled out twice (once each for the PRE and POST conditions) by 8495 participants (age = 37.2 ± 0.2 years (95% confidence interval (CI), 36.9–37.5); males = 38.3% (95%CI, 36.7–40.0); females = 61.7% (95%CI, 60.4–63.0). The relative frequency of overall sporting activities, which, prior to lockdown, occurred at least once per month, and overall participation in competitive sports was significantly reduced (8.6% (95%CI, 7.9–9.3) and 84.7% (95%CI, 82.9–86.6) respectively). With the exception of overall leisure time activities, which were significantly increased in the POST condition, daily occupational, transportation, and sporting activities significant reduced ($p < 0.05$). Overall PA was reduced in all genders, age, body mass index (BMI) and PA level subgroups in the POST condition, and an interaction between the males and High PA subgroups was observed. The change in overall PA (from PRE to POST conditions) was −16.3% (95%CI, −17.3 to −15.4), while in daily occupational, transportation, and sporting activities, it was –52.9% (95%CI, −54.8–51.0), −41.1% (95%CI, −42.8–39.5) and −23.9% (95%CI, −25.1–22.8), respectively. Thus, the lockdown period is highly associated with a negative change in overall PA. During lockdown, inactivity increased dramatically, with males and the high PA population affected significantly more. The decline in PA is a great concern due to possible long-term consequences on public health and healthcare system.

Keywords: cross-sectional; contagious disease; exercise; MET; public health; quarantine; questionnaire; SARS-CoV-2; sedentary life

INTRODUCTION

Globalization, changing user demands, and digital transformation have been, and continue to be, some of the important challenges faced by sports organizations. However, in recent months, this type of organization has faced an unpredictable situation that has shaken the foundations of sport: the COVID-19 outbreak. The

COVID-19 outbreak is a global pandemic still under study. It originated in December 2019, in the Chinese city of Wuhan, and has rapidly impacted, to a greater or lesser extent, all parts of the world. COVID-19 has affected and continues to affect all global areas and regions due to its highly infectious nature. In this context and with the need to assume responsibility, the governments of most countries have been forced to undertake restrictive measures and limitations, which are necessary to contain the virus that has changed the lives of many people, organizations, and institutions. The sports sector, despite being an important sector at economic, sporting, and social levels, has not been exempt from these restrictions.

According to Ratten, "the sport sector has been especially influenced by the COVID-19 crisis in a way that has never been seen before". All physical activity, face-to-face, and group sports were suddenly and indefinitely restricted in many countries, often being relegated to home-based physical training. As a result, sports organizations have had to reinvent themselves to offer a quality service to their users. Major events involving masses of people can contribute to the rapid spread of the disease, just as physical contact between athletes and physical proximity between fans can be a danger regarding the spread of the virus. Hence, governments have been forced to introduce and maintain social and mobility restrictions in an attempt to control the spread of the disease.

In this context, the sports sector has been forced to close facilities, ban travel, and cancel sporting events and leagues. In fact, it is expected that it will be some time before we return to training, competing and enjoying sport as we did before the appearance of COVID-19. However, from a sports perspective, this change is even more important for most professional and nonprofessional sportsmen and women who compete in federated leagues or tournaments. For all of these individuals, it has been very difficult to stop sporting activities indefinitely; therefore, sports clubs have had to reinvent themselves to be able to continue with sporting and social activities. In this process of adapting to change and managing the crisis, sports clubs must focus their efforts on maintaining the service quality that they offer to their users, as well as to sportsmen and women. To this end, it is necessary to implement risky, innovative, and proactive actions. Generally, sports entrepreneurship (SE) is a vital part of an organization's performance, and in the situation brought about by the COVID-19 pandemic, such entrepreneurship has become even more necessary.

SE is the capacity of an organization to identify ideas and opportunities and to develop innovative, risky, and proactive actions. Major changes can be generated through sports ventures that encourage the exploration and exploitation of existing opportunities. Furthermore, this construct is widely related to the capacity to create value and other final performance outcomes by the sports organization. The attention given by

academics and professionals to sports entrepreneurship in recent years has grown however, there is still a shortage of empirical studies that analyze the relationship between sport entrepreneurship and final performance variables in times of crisis.

LITERATURE REVIEW

M.A. Szychlinska, P. Castrogiovanni, F.M. Trovato (2019) Sport education is a powerful means to foster physical fitness, mental well-being, as well as social attitudes and behavior while populations are locked down. International rights and values based sport education instruments and tools, such as the International Charter of Physical Education, Physical Activity and Sport, the Quality Physical Education Policy package and the Values Education through Sport toolkit remain highly relevant references to ensure that the many online physical activity modules that are being currently deployed comply with gender equality, non-discrimination, safety and quality standards.

Z. Wu, J.M. McGoogan (2020) Sport is a major contributor to economic and social development. Its role is well recognized by Governments, including in the Political Declaration of the 2030 Agenda, which reflects on "the contribution sports make to the empowerment of women and of young people, individuals and communities, as well as to health, education and social inclusion objectives." Since its onset, the COVID-19 pandemic has spread to almost all countries of the world. Social and physical distancing measures, lockdowns of businesses, schools and overall social life, which have become commonplace to curtail the spread of the disease, have also disrupted many regular aspects of life, including sport and physical activity. This policy brief highlights the challenges COVID-19 has posed to both the sporting world and to physical activity and well-being, including for marginalized or vulnerable groups.

Q. Li, X. Guan, P. Wu (2020) The worldwide spread of COVID-19 has upset the normality of Italian daily life, forcing population to social distancing and self-isolation. Since the containment precautions also concern sport-related activities, home workout remained the only possibility to play sports and stay active during the pandemic. The present study aimed to examine changes in the physical activity levels during self-quarantine in Italy, and the impact of exercise on psychological health. A total of 2974 Italian subjects has completed an online survey, but only 2524 subjects resulted eligible for this study. The questionnaire measured the total weekly physical activity energy expenditure before and during quarantine (i.e. the sum of walking, moderate-intensity physical activities, and vigorous-intensity physical activities) in Metabolic Equivalent Task minutes per week (MET–min/wk) using an adapted version of International Physical Activity Questionnaire and their psychological well-being using the Psychological General Well Being Index. Of the 2524 Italian subjects included in the study, 1426 were females (56.4%) and 1098 males (43.6%).

J.F.W. Chan, S. Yuan, K.H. Kok(2020) Coronavirus disease - 19 (COVID-19) spread throughout the world and become pandemic. To stop and control the rapid infection of COVID-19 lockdown is the best option. Sudden lockdown implies change in entire lifestyle of the population. Social isolation affects individual's lives by greater reduction in their physical activity, which might increase the chance of infection by reducing immunity. To what extent, the physical activity is reduced during this lockdown period among physiotherapy professionals, and students who propagate physical activity is not known. Hence, we aimed to evaluate the impact of the COVID-19 lockdown on physical activity level and energy expenditure among physiotherapy professionals and students.

Y.R. Guo, Q.D. Cao, Z.S. Hong(2020) Sports entrepreneurship has been considered an important part of sports organizations when overcoming crisis situations. The aim of this study is to determine the impact of the crisis derived from COVID-19 on sports entrepreneurship and whether there are differences in the prediction of entrepreneurship on service quality in non-profit sports clubs. To this end, 145 sports clubs were analyzed before and after the outbreak of the virus in society. Paired sample-t tests were carried out to determine the differences in variables studied before (Time I) and after (Time II) the COVID-19 outbreak, and correlations and hierarchical linear regressions were used to analyze the relationship between the variables studied in the two different stages.

METHODOLOGY

Participants

The sample is made up of a total of 145 Spanish sports clubs, of which 55.2% (n = 80) are in the international-national category and 44.8% (n = 65) are in the regional-local category. Taking into account the type of financing, 27.1% (n = 39) obtained most of their financing from public sources, while 72.9% (n = 105) did so mainly from private sources.

Instruments

The instrument used in this study is composed of two different scales. The first scale measures the SE of sports clubs before and after the global pandemic. This scale was created by Covin and Slevin, based on Miller and Friesen, and is composed of eight items divided into three dimensions: risk-taking (e.g., “Our firm stresses a fully delegated policy for employees”), innovation (e.g., “Our organization stimulates creativity and experimentation”), and proactivity (e.g., “In dealing with our rivals, our organization typically initiates actions which they respond to”). The service quality scale used has been adapted for sporting environments from the original scale created by Vorhies and Morgan and is composed of five items (e.g., “The service quality we offer to our athletes, members and/or subscribers has improved”).

Procedure

The data analyzed in this study were collected through a questionnaire sent online through the University of Valencia’s own platform (LimeSurvey 2.5). The first sample (Time I) was collected between September

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and December 2019, and the second sample (Time II) was collected between April and May 2020. During this time, worldwide, there were limitations and restrictions derived from the COVID-19 outbreak. To obtain the sample for Time I, the questionnaire was sent to a total of 1368 sports clubs, of which 209 answered with a completed questionnaire. To obtain the sample for Time II, the questionnaire was sent to the same sports clubs as those contacted in Time I, and the questionnaire was preferably completed by the same person who completed the Time I questionnaire to obtain both a general view and an adjusted view based on the reality perceived in Time I. However, only 145 sports clubs completed the Time II questionnaire in a complete and valid manner.

RESULTS

In total, 8495 individuals participated in this study. The frequency, the relative frequency (%), and the 95%CI of the participants sub-grouped by gender, age, and BMI are presented in Table 2. Table 3 presents the frequency, the relative frequency (%), and the 95%CI of the weekly activity data by PA levels in participants in the PRE and POST conditions. The frequencies in the occupation and transportation activities of the majority of participants were significantly negatively affected by the restriction measures. The relative frequencies of overall sporting or exercise activities of participants who PRE had experienced said activity at least once per month were significantly reduced by 8.6% (95%CI, 7.9–9.3) during the quarantine period.

Table Overall PA estimates a in the POST condition by gender, age, BMI and PA levels, adjusted for the PRE condition covariate values (n = 8495)

	(MET-Min/Week)
Gender	
Males *	12,370.6 ± 157.1 (12,062.7–12,678.6)
Females	12,881.4 ± 123.6 (12,639.1–13,123.6)
Age classes	
Young (18–29 years)	12,647.0 ± 157.5 (12,338.2–12,955.8)
Adults (30–49 years)	12,614.5 ± 155.8 (12,309.0–12,919.9)
Middle-age adults (50–59 years)	13,077.7 ± 220.3 (12,645.7–13,509.6)
Old adults (60–69 years)	12,100.5 ± 486.5 (11,146.8–13,054.3)
70+ (≥70 years)	10,015.4 ± 1552.5 (6972.1–13,058.8)
BMI classes	
Underweight (BMI < 18.5)	13,296.6 ± 498.0 (12,320.3–14,272.8)
Acceptable weight (BMI = 18.5–24.9)	12,650.2 ± 130.0 (12,395.4–12,905.0)
Overweight (BMI = 25.0–29.9)	12,629.1 ± 177.5 (12,281.2–12,976.9)
Obese (BMI ≥ 30)	12,807.7 ± 291.6 (12,236.0–13,379.4)

PA levels	
Inactive (0 MET-min/week)	12,933.2 ± 220.2 (12,501.5–13,364.9)
Low PA (0–499 MET-min/week)	13,232.1 ± 262.0 (12,718.5–13,745.8)
Moderate PA (500–1000 MET-min/week)	13,033.7 ± 289.6 (12,466.1–13,601.3)
High PA (>1000 MET-min/week) *	12,384.1 ± 134.6 (12,120.1–12,648.0)

Moreover, the relative frequency of overall participation in competitive sports of 16.9% (95%CI, 15.0–18.9) in the PRE condition nearly reached a nadir in the middle of April (2.6% (95%CI, 0.5–4.7)).

The physical activity results in terms of the Active-Q domains and overall PA data from all subgroups in the PRE and POST conditions are presented in Table. With the exception of overall leisure time activities, in which EE significantly increased in the POST condition (Table 4), the EE was significantly reduced in the POST condition (i.e., daily occupational, transportation, and sporting activities).

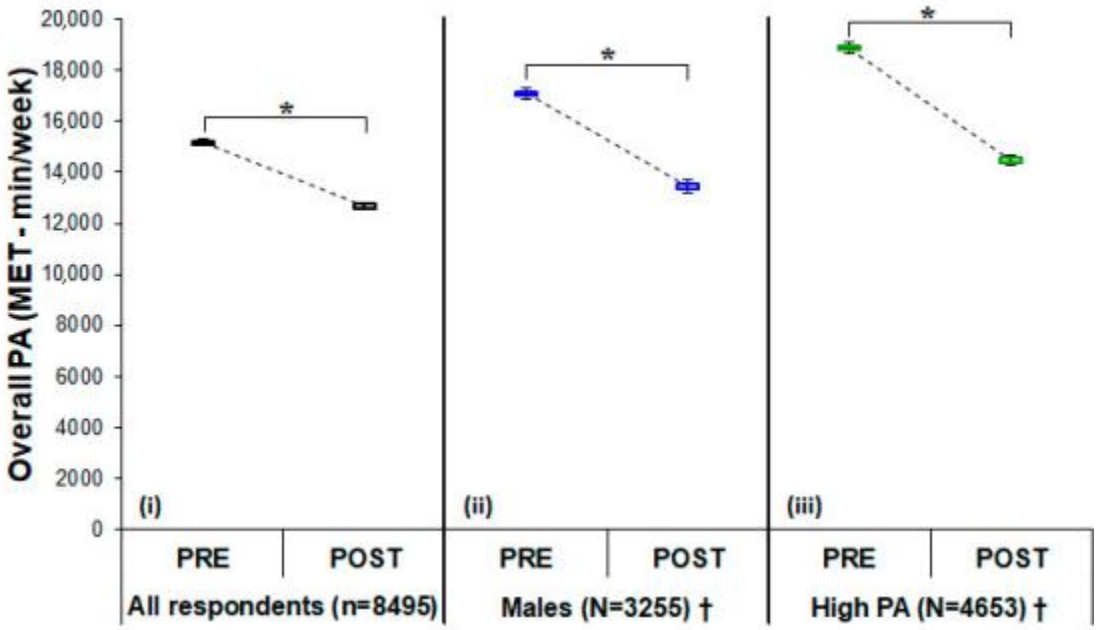

Figure Overall PA in the PRE and POST conditions for all respondents (i), males (ii), and High PA respondents (iii). Data are presented as mean ± SE. * p < 0.05, significant difference in all groups between conditions. † p< 0.05, significant interaction effect of lockdown on the PA subgroups. Abbreviations: MET, metabolic equivalent task (=3.5 mLO2/kg/min); PA, ph

The frequency of inactivity significantly increased by 40.6% (95%CI, 38.3–42.9) in the POST condition, while the frequency of moderate and high PA was significantly reduced, by 12.6% (95%CI, 10.5–14.7) and 13.0% (95%CI, 12.0–14.0), respectively (Table 3). In the study population, overall PA was reduced significantly in the POST condition, as well as across the

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gender, age, BMI and High PA level subgroups (Table 4). Furthermore, the one-way ANCOVA tests revealed that overall PA in the POST condition was significantly affected by gender and PA level.

The post hoc analysis revealed a significant interaction between males and the High PA subgroups. The change in overall PA (%, from the PRE to POST conditions) on a weekly basis by all respondents, by all subgroups, and by Active-Q domain activities is depicted in Figure.

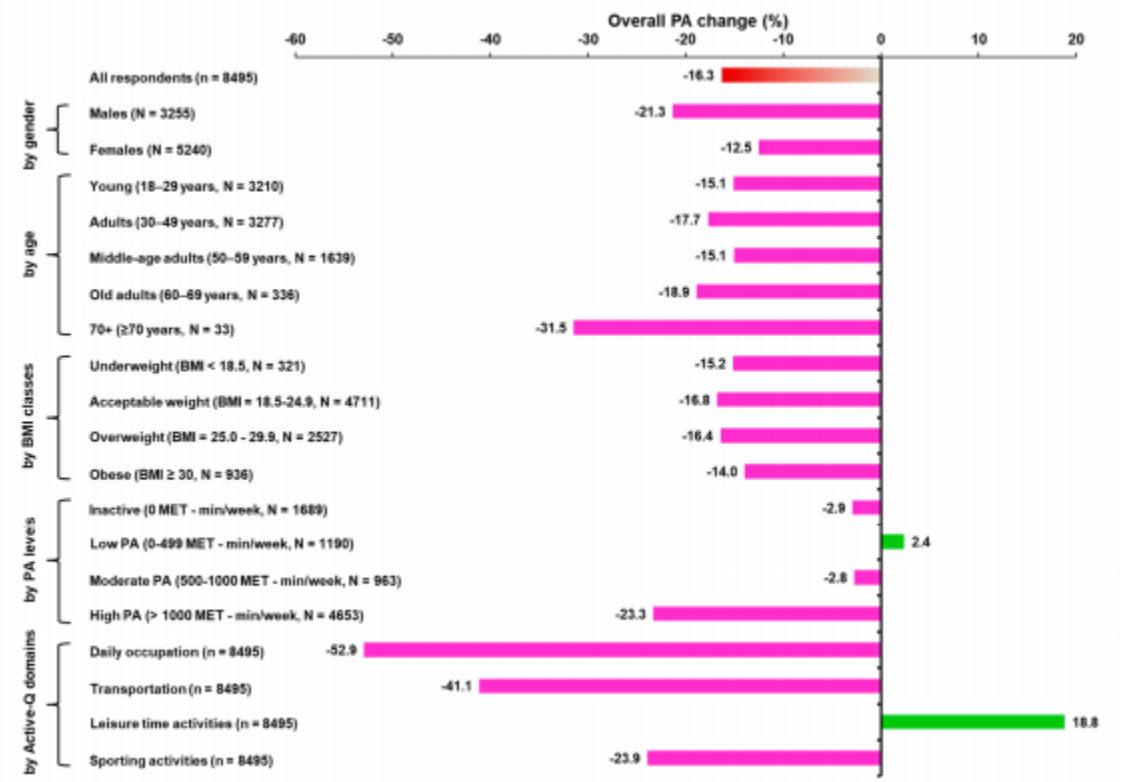

Figure Change in overall PA change (%, from the PRE to POST conditions) on a weekly basis in all respondents, grouped by gender, age, BMI, PA level, and Active-Q domain activities. Abbreviations: BMI, body mass index; MET, metabolic equivalent task (=3.5 mLO2 /kg/min); PA, physical activity

Specifically, the 95%CI of the change in overall PA (from the PRE to POST conditions) was −17.3 to −15.4 in all participants, −23.1 to −19.6 in males, −13.5 to −11.5 in females, and −24.9 to −21.8 in High PA respondent. Moreover, the 95%CI of the change in overall PA (from the PRE to POST conditions) in daily occupational, transportation, and sporting activities was −54.8 to −51.0, −42.8 to −39.5 and −25.1 to −22.8, respectively. The only positive change in overall PA (from the PRE to POST conditions) was observed in leisure time activities (95%CI, 17.9–19.7; Figure).

CONCLUSION

The COVID-19 Pandemic was a life changing factor for our students affecting all aspects of their daily routine. The evaluation of the behavior regarding physical activity revealed that this component of our students' life is of great importance in both the educational and leisure aspects of life. Moreover, the study revealed that face to face interpersonal contact has a great importance for both the educational performance, and psychological and social aspect, by keeping the level of motivation at high levels. Last but not least, the physical activity performed even in unusual conditions, such as Pandemic lockdowns, has a great influence on stress management.

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