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The Changing of Sport Activities During COVID-19 Pandemic: Do People Exercise More? †

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Abstract: Exercise has been shown to have clear health benefits for healthy individuals. Nevertheless, COVID-19 pandemic limits outdoor activities to prevent the coronavirus spread. This research aims to analyze how COVID-19 affects people's exercise. Using an online survey, we collected data from 316 Indonesian people who are currently exercising. The result shows the good effect of COVID-19 on people's sports activities. Maintaining immune system function becomes the main reason people exercise intensively or even start making this habit. COVID-19 pandemic can be a good momentum to promote exercising as a part of a healthy lifestyle. However, health protocols to prevent coronavirus spread must be strengthened.

Keywords: COVID-19; healthy lifestyle; exercise; immunity

1. Introduction

In this COVID-19 era, people are expected to boost their immunity by living a healthy lifestyle, including having an exercise habit [1]. Exercise has been shown to have clear health benefits for healthy individuals [2]. Regular exercise can play a role in increasing the body's immune system to defense against COVID-19 [3]. However, sometimes exercise motivation appears to be a complex issue given the variation in the population involved (e.g., children, adolescents, the elderly), reasons for doing so (e.g., fitness, weight control, competition), type of the exercise activities (e.g., baseball, swimming), and the contexts of exercising (e.g., entertainment, clubs, educational frameworks) [4].

COVID-19 pandemic made the various motivational barriers to exercise should have decreased due to increasing public awareness to boost the body's immunity to avoid COVID-19. A systematic exercise program scientifically and personally structured is thought to increase the immune response, which is considered necessary to fight against COVID-19 [5]. Furthermore, the COVID-19 epidemic requires implementing a strict isolation strategy to prevent the spread of the virus [6]. Self-isolation has adverse effects with fear of infection, quarantine, and stigma, as well as with potential misinformation overload that begins with accumulated boredom and is accompanied by excessive fear of COVID-19 [7][6]. This phenomenon has made people's lifestyles begin to shift by creating a healthy lifestyle (like exercising) to fill leisure time and maintain immunity in a fun way in today's boring situations. Research has shown that exercise can reduce stress's adverse effects to support immune function because it can reduce anxiety [1].

On the other hand, suggestion to do physical distancing and staying at home during the COVID-19 pandemic have likely increased people's physical inactivity and sedentary behavior that already occur in many countries over recent years [1]. People are encouraged to do their work, study and even entertain themselves from home. Outside activities are restricted, including doing exercise in a gym or sport activities in a crowded environment. Although COVID-19 might be a good momentum to exercise more, at

the same time, this pandemic era also hinders people from doing their sports activities. Therefore, it is interesting to see whether people's exercise habits in a pandemic situation have changed, whether people's exercise habits have increased or not in the COVID 19 pandemic situation. The rest of the article is as follows. The next section describes the data employed, the studied variables, and the statistical method used. The section afterward presents the main empirical findings, and then discusses these results.

2. Material and Methods

Population in this research is people above 15 years old who are currently exercising. We conducted an online survey using the Google Form with simple random sampling technique. Random sampling is employed to apply quantitative methods to the data as it allows the results to be generalized to the larger population and for statistical analyses to be performed [8]. Using random sampling techniques with an online survey is not easy as there is no systematic way to collect a traditional probability sample of the general population using the internet [9]. However, it is allowed to randomly sample and contact people via another method and ask them to complete the survey online [8]. In this case, we approached our respondents through WhatsApp, Instagram, and Line, in one week, from December 2nd to December 8th, 2020. We also tried to reach some healthy lifestyle influencers on Instagram but it was not working. At the end of the survey periods, there were 326 Indonesian people who filled the questionnaire.

Questionnaire in this research consists of two parts that identify respondents' socio-demographic characteristics and their exercise habits. Age, gender, education, occupation and residence address are used to describe the respondents' socio-demographic characteristics. Exercise variable describes by asking the changing of respondents' exercise habit before and after COVID-19 pandemic, the reason behind it, and description of current sport activities (duration, location, sport type). Researchers then cleaned collected data by removing respondents who were not suited to this research. After the cleaning process, there were 321 respondents who qualified to be analysed using Microsoft Excel. Descriptive analysis was employed to the variables.

3. Results

3.1. Sosio-demographic

Most respondents in this survey are men (61.4%), 20-29 years old (68.5%), and have higher education (74%). Previous research also demonstrates that young men are more likely to exercise than women [10]. Besides, half of people who exercise in this research work as employees both in the private and public sector (44.5%), only 2.8% work as housewives. Respondents also mostly live in Java (76%), since Indonesian people are still concentrated on Java Island (Statistics Indonesia, 2019). Furthermore, full versions of the respondents' characteristics are shown in the table below.

Table 1. Respondent Characteristics.

Variable	Category	N	%
Gender	Male	197	61.4
	Female	124	38.6
Age (years)	15-19	31	9.7
	20-24	105	32.7
	25-29	115	35.8
	30-34	32	10
	35-39	16	5
	40-44	13	4
	45-49	5	1.6
	>50	4	1.2
Education	Primary	0	0
	Secondary	83	25.9
	Higher	238	74.1

Occupation	Student	99	30.8
	Lecturer	23	7.2
	Civil Servant	52	16.2
	General Employee	91	28.3
	Entrepreneur	21	6.5
	Housewives	9	2.8
	Jobseeker	19	5.9
	Others	7	2.2
Region of residence	Java	262	81.6
	Sumatra	29	9
	Bali & Nusa Tenggara	4	1.2
	Sulawesi	8	2.5
	Kalimantan	12	3.7
	Maluku & Papua	6	1.9

Source: Authors' Online Survey.

3.2. Exercise Habit

The result shows a good effect of COVID-19 on people's exercise habit. Almost 1 of 5 people who did not exercise before started exercising during the COVID-19 pandemic. Moreover, almost half of respondents who already exercise before the COVID-19 pandemic change their sports activities better, increasing duration and the sport type. Maintaining immune system function becomes the main reason people exercise intensively or even starting to exercise.

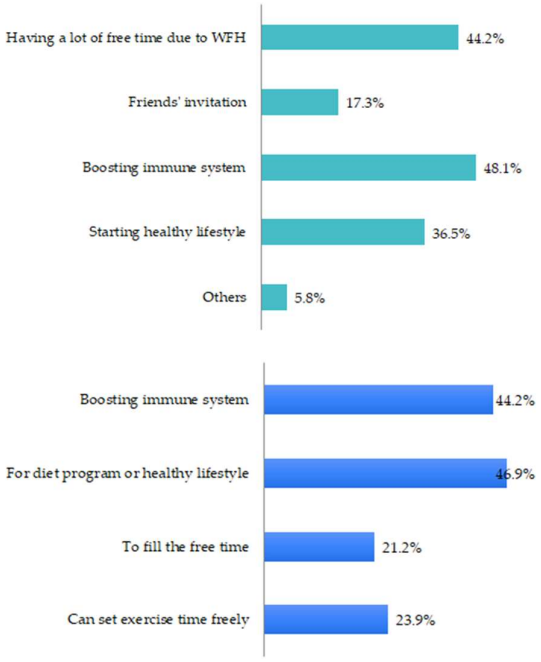

Figure 1. Respondents' reason to start exercising (green) and perform better during COVID-19 pandemic (blue).

On the other hand, 1 of 3 respondents felt no difference in their exercise habit before and after COVID-19 pandemic. However, 1 of 4 respondents said their exercise performance was decreasing after COVID-19 pandemic. The restriction of sport facilities to open (43%), fear of catching COVID-19 (10%), decreased motivation to exercise (33%), and less friends to do sport together (29%) became the reason some respondents had reduced their exercise intensity.

During COVID-19 pandemic, running, home workout, and sport games like football, badminton, etc, are the most popular sports among respondents. They usually do

their sport activities at home (40.2%), outside (31.8%), or in a building other than their houses (28%). Most respondents exercise 30-60 minutes, once or twice a week. As a result, they feel more vital, both physically and mentally.

4. Discussion

Restrictions on sports facilities (many of which are closed) are indeed the biggest obstacle for the community in efforts to maintain or even improve their exercise habits. Exercise in private environments, for example in home, with good ventilation and use of personal equipment is more reasonable during COVID-19 pandemic. A home exercise program using different safe, simple, and easily implementable exercises is suitable to avoid the airborne coronavirus and preserve fitness levels [1]. Few people are still afraid to exercise outside so they decided to do sports activities in their home. The home exercise program is a sports option because it is safe, easy, and inexpensive to implement. This program includes aerobics (for example: walking at home or around it), muscle strength training, exercise stretching and balance or a combination [15].

Acute exercise (moderate-to-vigorous intensity, less than 60 min) is now viewed as an important immune system adjuvant to stimulate the ongoing exchange of distinct and highly active immune cell subtypes between the circulation and tissues [2]. Therefore, the habit of exercising with moderate intensity for approximately 60 minutes is the most frequent exercise habit to do. Moderate-intensity exercise has positive enhancing effects on immune system responses against viral respiratory infections by reducing the risk and severity [14][15]. High intensity exercise especially in public gyms and crowded environments are not recommended [15], although the adverse effect of exercising above 60 minutes are still debatable [1].

Exercise is also part of recreation to foster a sense of community which is introduced by the programs and services offered and occur in the facilities of a sport [11]. The absence of a community to build relationships when exercising has influenced people's motivation to exercise. After all, human is social creatures that need interaction. Maslow said that one of the four main human needs is the facilitation of social needs to gain a sense of security through a sense of belonging, association, feeling accepted, giving and receiving friendship [12]. Therefore, it is not surprising that 1 of 3 people have decreased motivation to exercise due to the lack of friends to exercise.

On the other hand, the current pandemic situation is increasingly dependent on digital technology as a support for various activities, including sports. The results of research in America show that the use of 'physical activity' applications in smartphones can help decrease MET (metabolic equivalent of task) minutes per week for adults physical activity that has occurred in America (18.2%) and that application features related to ramification may be of great help [13]. For this reason, it is advisable for the public to maintain their exercise habits with the help of various available technological supports.

5. Conclusion

COVID-19 pandemic can be a good momentum to promote sports activities as a part of a healthy lifestyle. However, health protocols to prevent coronavirus spread must be strengthened since many people are already exercising outside their home.

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