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SYSTEMIC REVIEW

Recommendations for Improving Physical Activity and Health-Related Physical Fitness Elements During Pandemic Periods

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ABSTRACT

Background: Covid-19 has turned into a great pandemic that surrounds the whole world and exposes individuals to a physically inactive state, and as a result, has many negative effects together.

Aim: The purpose of this research is to investigate physical activity behaviors during the COVID-19 pandemic process, and also to offer specific suggestions for improving the physical activity and health-related physical fitness of individuals.

Methods: Our research is a review research in which many studies examining the changes in physical activity behaviors of people during the pandemic period are examined.

Results: According to the research results; It was observed that individuals living in urban centers were less physically active than before the pandemic and their health-related physical fitness developed negatively during the pandemic process, while some individuals living in rural areas had an increase in their physical activity levels. It has been observed that physical activity levels have also decreased, especially since individuals living in urban life cannot reach many opportunities they have reached before due to the pandemic and have to stay at home due to the restrictions imposed by the governments.

Conclusion: In our research, various suggestions were made for indoor and outdoor activities that can be done at home and in rural recreation areas in these and similar situations, and it was tried to help individuals to maintain the continuity of physical activity behaviors and to develop health-related physical fitness elements.

Keywords: physical activity, fitness, health, pandemic

INTRODUCTION

The coronavirus disease (COVID-19) started in December 2019 in Wuhan, China, and on March 11, 2020, WHO declared COVID-19 as a global epidemic[1]. Adults of all ages with certain underlying health conditions, including cancer, coronary artery disease, obesity, severe obesity, and heart conditions such as type 2 diabetes mellitus (T2DM), are at risk for serious illness from COVID-19[2, 3]. In order to reduce the risk of transmission of the virus, various restrictive practices such as social distancing, mask use and hygiene have been put in place by governments around the world. In addition, crowd working restrictions in institutions and collective organizations came into play. While these measures taken by governments have reduced the overall infection rate, they have had some adverse effects on people's physical activity behavior and health[4].

According to the latest data of WHO, 209,876,613 cases have been detected so far and 4,400,284 of these cases resulted in death[5]. WHO, in collaboration with national authorities, institutions and researchers, continues to monitor public health events associated with SARS-CoV-2 variants and provides updates as new information becomes available[6]. While the COVID-19 epidemic continues to develop in almost all regions, some protective and preventive practices have been implemented by the authorities within the scope of social distance and self-quarantine in order to minimize the spread of the virus[7].

Schools and universities switching to online education, the closure of non-essential businesses such as stores and factories, the obligation to stay at home except for basic needs, nutrition and health[8], restrictions on social and sports areas. strict reduction policies have been implemented. As a result, although it is reported that the measures taken have a significant effect on reducing the transmission of the virus and are necessary to keep it under control[9], staying at home for long periods of time has brought physical inactivity and a sedentary lifestyle[10, 11]. Sedentary lifestyle; defined as activities that have an energy expenditure <1.5 metabolic equivalents (MET), such as watching television, using a computer or smartphone, and playing video games[12]. Sedentary lifestyle is associated with cardiovascular diseases, glucose metabolism disorders, mortality and low physical fitness[13]. Stockwell et al., (2021) reported a high rate of decrease in physical activity levels when applied restrictions[14]. It seems very difficult to make an estimation about how long these effects will last and how the normalization process will be achieved[10]. In this context, it seems important to encourage physical activity to protect the mental and physical health of individuals during this viral epidemic[15].

Physical inactivity was reported as 7th in the list of lethal factors affecting humans in 2002 by WHO, and 4th in 2010[16]. From this point of view, physical inactivity is already a serious health problem that has been growing for years[17]. Many institutions such as the World Health Organization[1] and the American College of Sports Medicine[18], which are aware of the consequences of physical inactivity, make physical activity recommendations by stating the importance of physical activity. However, many studies have reported increases in physical inactivity during COVID-19 in different countries[19] This result shows that there are difficulties in following the recommendations to stay active during this period. Various empirical studies have shown a significant decline in physical activity during the pandemic due to the closure of sports and leisure facilities, quarantine and quarantine measures, and stay-at-home policies[20]. Especially during the Covid-19 pandemic, the decrease in physical activity levels has negatively affected people's health, both physically and mentally[4, 21]. It

is well known that maintaining physical activity levels of individuals also contributes positively to their health. WHO recommends more than 150 minutes of moderate-intensity physical activity or 75 minutes of vigorous-intensity physical activity per week[22]. Reaching the recommended level of physical activity helps to be healthy by strengthening the immune system, reducing the risk of cardiovascular disease, diabetes, obesity, hypertension, cancer, osteoporosis and depression[23].

Although there is a promising increase in the number of people who prefer to be physically active in their free time in some countries; In developed and developing countries, it is known that the tendency for insufficient physical activity is increasing[10, 17] in the WHO's 2020 report, it was reported that a quarter of adults (27.5%) and more than three-quarters of adolescents (81%) did not meet the recommendations for aerobic exercise[12]. This high prevalence of physical inactivity, its adverse effects on health and the environment has made this problem a global public health priority[16]. There are many internal and external factors that affect participation in physical activity[24]. Just as the fitness level of individuals affects the rate of participation in physical activity[25], the level of physical fitness is also greatly affected by increased physical activity, especially structured exercise programs[26]. Therefore, it can be said that the relationships between physical activity and fitness are mutual[27]. Physical activity and fitness are generally regarded as important to public health, as they contribute to improving physical and mental health and preventing a range of diseases and other problems later in life. Schmidt et al., (2017) reported that maintaining a high level of physical fitness is important for improving health[25]. Also, with regard to health promotion, they emphasized that strengthening physical fitness should be the main goal, as increasing the level of physical activity is not sufficient to result in long-term health benefits. Physical fitness is defined as a person's ability to perform daily activities without excessive fatigue and having sufficient energy reserves to enjoy recreational pursuits. It has two main titles: physical fitness related to health and skill. Body composition, cardiorespiratory endurance, muscular strength and endurance, flexibility are classified as health-related physical fitness parameters, while balance, coordination, reaction time, agility, speed and power are classified as skill-related physical fitness parameters. Health-related physical fitness parameters are taken into account in terms of public health. As a result of maintaining the level of health-related physical fitness, a person reduces the risk of illness and injury, works efficiently, participates in and enjoys physical activity (sports, entertainment, leisure time), and looks the best physically[26] and are reported to have positive effects on quality of life. Epidemiological studies over the past 50 years have shown that low physical activity and physical fitness are associated with high cardiovascular and total mortality[27].

Physical activity is an important behavior that provides numerous health benefits, many of which are particularly relevant during the COVID-19 pandemic[28]. At the same time, physical activity can help manage some of the chronic conditions well. Besides the long-term benefits, physical activity has significant acute benefits, including better sleep and reduced anxiety symptoms, both of which were negatively impacted during the COVID-19 pandemic[29] presents. The world is currently facing two pandemics: physical inactivity and the Covid-19 virus[10]. In the study, it was determined that patients with a higher peak METs value than 246 patients infected with Covid-19 had a lower rate of hospitalization. Similarly[29], athletes and sedentary individuals with Covid-19 found that the probability of hospitalization and hospital stay of athletes was lower than sedentary individuals, Cardiorespiratory fitness is considered the main component of physical fitness, but muscle strength and fat percentage are also considered important physical fitness components related to health[30]. In this context; it can be said that regular physical activity and high level of cardiorespiratory fitness have positive/improving effects on the immune system, chronic low-grade inflammation and upper respiratory tract infection and can also promote strong effects against the consequences of infectious diseases and chronic diseases associated with the development of severe forms of COVID-19[31]. For these reasons, improving the level of physical fitness before becoming infected is seen as an important public health intervention.

Reducing physical inactivity time during the COVID-19 pandemic, promoting all the benefits associated with exercise[31], studies to boost immunity and alleviate the harmful effects of inactivity and social isolation stress on our immune system[15] can be defined as an adjunctive therapy. In this context, various government organizations and health or exercise experts have offered exercise recommendations on how to stay active during the pandemic, especially during periods of having to stay at home. However, during or after the restriction period, informing individuals about health-related physical fitness elements and test batteries that can measure physical fitness levels, and providing a measurement-evaluation opportunity to determine individual roadmaps should not be ignored. Stockwell et al., (2021) recommend the creation and implementation of public health strategies that promote safe physical activity and reduce sedentary behavior in restrictions[14]. From this point of view, not only increasing the level of physical activity, but also evaluating and monitoring the level of physical fitness, which is a modifiable risk factor for cardiorespiratory disease and mortality[32], should be included among these practices. Health promotion models and the adoption of active living developed in response to the COVID-19 pandemic can positively influence long-term physical activity habits after normalization. For this reason, the application of easy-to-apply and low-cost physical fitness tests in addition to the physical exercise programs that can be applied at home during the pandemic will strengthen the effect of physical activity and the monitoring of individual physical capacity. While sophisticated laboratory equipment and appropriate testing protocols are required for the most valid assessment of aerobic and anaerobic fitness, properly conducted field testing provides individuals with a simple, feasible, practical, reasonably valid and reliable alternative[33].

This study aims to provide practical application and evaluation suggestions for individuals, especially for physical activity and health-related physical fitness

assessments during the pandemic process, by interpreting the findings of the research on physical activity levels during the pandemic process.

MATERIAL & METHODS

Our research is a compilation study. Many studies examining the physical activity behaviors of individuals during the Kovid-19 pandemic process were examined, and information about the findings and results of these studies was conveyed. K Literature searches on the subject were carried out by using various libraries such as EBSCO, American Physical Society, Google Scholar, World Ebook Library. Over 400 sources were scanned and our study was completed by compiling information from the studies that should be included in our research.

DISCUSSION

In the literature, detailed information is given about physical activity, physical fitness (health-related and skill-related), sedentary lifestyle, physical activity and its importance in the pandemic processIn this section, the relevant information will be presented, considering the previous studies for physical activity and health-related physical fitness recommendations during the pandemic, which is the aim of our research, and the results will be discussed and suggestions will be presented.

The pandemic has caused various changes on people's physical activity behaviors. It has been revealed by the results of many studies that these changes are especially negative. Namely; In a study on physical activity behaviors of US adults during the Covid-19 epidemic, 20% of those who were physically active during the pandemic were found to be 30% while those who were not physically active. Participants in the study stated that the biggest reason for doing less physical activity was the concern of exposure to the virus[33]. In another study conducted to determine the physical activity status of adult individuals, 25% stated that they were more physically active during the pandemic period, while 39% stated that they did less physical activity during the pandemic period[34].

Understanding the underlying causes of individuals' physical fitness status and changes in physical activity behavior during the COVID-19 pandemic and, as a result, identifying groups that may benefit from efforts to increase physical activity may contribute to this negative situation. Thus, by maximizing the public health benefits from this important health behavior, it can also contribute to the development of health-related physical fitness parameters such as aerobic fitness, muscular strength increase, and body composition.

The pandemic process has also had an impact on the physical activity behaviors of individuals according to race and ethnic groups. In a study revealing this situation, it was observed that those who were diagnosed with Covid-19 disease and died from this disease (black and Hispanic populations) reported less physical activity[35]. The researcher stated that this situation may be due to the fact that black and Hispanic groups are exposed to this situation, their access to health services is more difficult, social inequality and low-income individuals from minority groups. During the COVID-19 pandemic, the burdens of COVID-19 and chronic diseases have become disproportionate. However, the lack of access to supports and opportunities to participate in physical activity safely and the importance of implementing community-based strategies to increase physical activity became evident[33]. It is important that these strategies are developed and implemented in a way that includes all ethnic and racial segments living in the countries. Although there are studies specific to racial and ethnic groups in our country (Turkey) regarding the Covid-19 pandemic, no study has been found on physical activity behaviors of racial and ethnic groups during the pandemic process.

During the Covid-19 pandemic, people started to move from urban living areas to rural and uncrowded living spaces. Although there are many reasons for this (such as staying indoors due to restrictions, not seeing anyone, risk of contamination due to crowded apartment life, being physically inactive, etc.), the decrease in physical activity levels, which is the subject of our research, is also an important factor. Wang et. Al., (2021) investigated the moderate effect of the Covid-19 process on the physical activity levels of individuals living in cities. As a result of the research, they found that the duration of physical activity at home and outside during the pandemic decreased for all participants[36]. However, they observed a statistically insignificant increase in the duration of physical activity in parks, especially for those living in low-density neighborhoods[36]. In another study, it was concluded that recreational activities, especially in green areas, increased during the pandemic[37]. As it can be understood from here, individuals who had many social and recreational opportunities in their urban life before the pandemic could not reach these opportunities during the pandemic and as a result they became less physically active. However, the fact that those living in rural areas and green areas can continue these opportunities during the pandemic has enabled them to be more physically active.

The pandemic process hasn't just caused individuals to just become less physical. Physical inactivity also resulted in a decrease in physical fitness levels. Marashi et al., (2021), concluded in their study that participants had an 11% decrease in aerobic activity levels, a 30% decrease in strength training levels, and an 11% increase in sedentary lifestyles[38]. The main findings of a study conducted with young badminton players before and after the pandemic; It was determined that badminton players' sedentary lifestyle increased and their total daily physical activity levels decreased[13]. A high sedentary lifestyle leads to a decrease in the performance of the athletes, a decrease in the maximum oxygen consumption capacity (VO2max), a decrease in the strength and endurance capacity and a decrease in their physical fitness.

Many of the studies reveal that individuals have less physical activity levels after the pandemic than before the pandemic. It is seen that people's physical activity levels decrease due to factors such as avoiding closed and crowded environments such as fitness centers and gyms, and various restrictions imposed by governments. In addition, certain results have emerged that the level of physical activity increased. Physical activity has increased, especially in rural parks and recreational green areas. This situation may reveal that individuals want to reduce the risk of disease transmission by participating in such activities in

the open air and at certain distances, and they try to stay healthy by reducing their physically inactive state.

CONCLUSION

The Kovid-19 pandemic still continues and comes up with new variants. It is aimed to overcome this situation with the application of the developed vaccines, but the pandemic is peaking again in some countries due to reasons such as not being able to reach the desired level yet, not being able to provide adequate access to the vaccine, and not fully complying with the hygiene and distance rules. This situation brings with it new closures and restrictions. The new closure and restriction also means less physical movement. It has become even more important during the pandemic period to raise awareness of individuals with various physical activity suggestions according to the environment they are in and the possibilities they have during the lockdown and closure periods. As seen in the results of the research, more physical activity brings with it a better physical fitness. For this reason, the following physical activity recommendations can be brought to individuals in case of closures as in pandemic processes:

- If you live in a detached house, you can walk around the house for 2-25 minutes with fast steps accompanied by music
- If you are in an apartment, you can go up and down the stairs (4-5 floors) 2-3 times
- You can do your exercises at home through the trainers you can find on the internet
- If your home environment is suitable, skip a lot of rope
- You can dance to the music at home
- If you have the opportunity, you can increase the level of physical activity by buying cardio devices at home
- If you live in rural areas, you can do your exercises outside, if your parking areas are available, you can perform recreational activities
- If possible, ride a bike
- You can play games that require physical activity with your family at home
- Do yoga and deep breathing exercises
- Do push-ups and sit-ups with your own weight

You can diversify the activities you can do by taking such activities as an example. Just being more physically active may not be the only solution in terms of health. At the same time, if you need to review your eating habits, especially during pandemic periods, it is recommended to get an expert opinion. Having both your eating habits and physical activity behaviors regularly in your life will contribute to strengthen your immune system, increase your muscle mass, increase your lean body mass, cardiovascular recovery and continuity. For this reason, exercise and nutrition prescription is important for both physically active and sedentary individuals.

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