

# The Impact of Virtual Physical Education on Physical Activity and the Reduction of Sedentary of Elementary Students in the Covid-19 Era

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## ABSTRACT

**Background and Aims:** Preliminary evidence suggests that the social constraints needed to reduce the prevalence of COVID-19 have increased participation in sedentary behavior and reduced children's opportunities to participate in physical activity. Therefore, the aim of the present study was the effect of virtual physical education on physical activity and reduction of sedentary of elementary students in the Covid-19 era.

**Materials and Methods:** A Semi-experimental design was conducted (pre-test and post-test) with two experimental and control groups. For this purpose, thirty 8 to 11 year old male students in Kütahya who had low scores in the Physical Activity Questionnaire (PAQ-C) (1 to 2.33) and high scores in the Inactive Researcher's Questionnaire, were selected by convenience sampling and randomly assigned to experimental and control groups (equal to 15 people in each group). Then, the experimental group underwent virtual physical education training for 10 sessions and two 45-minute sessions each week. No intervention was performed on the control group during this period. All subjects completed the Physical Activity Questionnaire (PAQ-C) and the sedentary researcher-made questionnaire before and after the training. Univariate analysis of covariance was used to analyze the data.

**Results:** The results showed that there was a significant difference between the level of physical activity and sedentary of elementary students in the experimental and control groups. The intensity of the effect is equal to 0.58 and 0.66, respectively. The amount of physical activity in the experimental group ( $m = 2.57$ ) was significantly higher than the control group ( $m = 1.95$ ). The rate of sedentary in the experimental group ( $m = 3.25$ ) was significantly lower than the control group ( $m = 3.64$ ).

**Conclusion:** The results showed that virtual training of physical training (watching video models and teaching the basic concepts of physical activity) is effective in increasing physical activity and reducing sedentariness of 8 to 11 year old male students during COVID-19.

**Keywords:** Virtual Physical Education, physical activity, sedentary, Students, COVID-19.

## INTRODUCTION

Coronavirus (COVID-19), which is caused by the acute respiratory syndrome of Coronavirus (SARS-CoV-2), is one of the major global health issues today [1]. Symptoms of the virus vary from mild to severe. Signs and symptoms of infection include fever, cough, and difficulty breathing. [2] In Turkey, the existence of patients with coronavirus was officially confirmed on March 11, 2020 [3]. Many national governments have taken countermeasures to combat Covid-19 disease and prevent infections, including policies of social exclusion, school closures, shops, and leisure opportunities. Call restrictions, and travel prohibitions, while these restrictions effectively reduced the spread of the virus and curbed the disease, they had negative effects because people were forced to stay at home, which increased the risk of social isolation [4]. Restricting leisure opportunities such as exercise also hinders physical activity, while at the same time, the rate of inactivity during quarantine increased due to more time at home [5].

One of the population groups affected by the restrictive measures was children [6], so that students have significantly reduced their mobility and motor activity through school closures and reduced leisure activities. It leads to an increase in unhealthy lifestyle habits and increases the risk of disease [7], because they cannot play with friends, be active in their sports groups or in school have regular physical education (PE) classes [8]. This is particularly significant because previous studies have shown that most children and adolescents did not follow

the WHO-recommended 60 minutes of physical activity (PA) per day even before the epidemic [9], further reducing Physical activity during an epidemic can have detrimental effects because PA in childhood and adolescence is a key determinant of future PA, is a prelude to mental health, and avoids health challenges. The future helps, such as obesity and cardiovascular disease [10].

The issue of improving the level of health and increasing physical activity in this document is seriously considered and has a special importance, so that in the statement of values, vision and goals on the vitality and physical health of students through exercise and healthy recreation. Individual and group are emphasized [11]. Since the closure of schools to help eliminate coronary heart disease, the concern of developing and implementing curricula for continuing education at home and under quarantine has become the biggest challenge for education systems. This challenge and concern has been raised not only in our country but for all and countries of the world. One of the most important and serious programs proposed and implemented by the country's education is the discussion of e-learning or cyber education. As today, the world of education has shifted its focus from teaching to learning, and such an approach is achieved due to the extensive knowledge of information technology and rich technology [12].

Therefore, physical education is one of the most important and influential courses on the physical and mental health of students, and virtual education of physical education during the corona epidemic, not only should not

be abandoned, but should be properly planned in this regard [13]. Accordingly, distance learning physical education courses that have special conditions and include practical and motor skills face challenges that align the goals of the courses based on the document of fundamental change with the selected methods. Distance education such as messengers, online education, television school and educational packages is one of the most important goals of these trainings, which of course should not be purely theoretical and knowledge, but should provide conditions for the learner to be obliged to Simultaneously follow virtual trainings and practical exercises to deepen the neural connections of the brain and improve its function and learning [14].

Accordingly, in a study by Webster et al. [15], they concluded that following the outbreak of Covid-19, online physical education plays an important role in sustaining students' physical activity and providing hospitality. Slow for physical education educators and teachers to advance OLPE and enjoy the educational and general health benefits of high quality physical education programs. Research by Gao et al. [16] demonstrates the use of virtual reality training to facilitate improved physical outcomes (such as increased mobility, reduced obesity), cognitive and psychological outcomes during the COVID-19 epidemic in the elderly. The results of Ahmadi et al. [17] indicate that the use of web-based physical activity interventions can lead to an increase in physical activity and psychological well-being in adolescent boys with insufficient mobility. In addition, López-Carril et al. [18] believe that YouTube and Instagram were the most widely used social media platforms (SM) to view or practice PA during the COVID-19 epidemic. Also, during the coronary quarantine in Turkey, physical education courses, which play an important role in children's active lifestyles and are not in-person training every day of the week, with live lessons created through the EBA (Education Information Network) during normal class hours during the process. Distance education continues [19], which had a great impact on increasing children's mobility and physical activity. The UAE is one of the leading countries in the implementation of virtual sports activities at home, and AbouElmagd [20] conducted in this country concluded that regular physical activity, strengthens the immune system, improves bone health and reduces health risks such as heart problems, diabetes and many life-threatening diseases. The World Health Organization and a number of other stakeholders emphasize the role of physical activity in responding to Covid 19.

In Turkey, education in schools was implemented virtually in the official messengers of education called Shad for all subjects, especially physical education, but this program had its own disadvantages, for example: lack of necessary infrastructure for Virtual education of physical education course through cyberspace, low importance of virtual education of physical education course compared to other courses and lack of attention to it as an important part for students' physical and mental health, case planning and lack of programs and A well-codified model for virtual education of physical education is the lack of appropriate policies to increase the individual motivation of physical education teachers [21].

## MATERIALS AND METHODS

The method of the present study was quasi-experimental (pre-test-post-test) using two experimental and control groups. The statistical population includes all 8 to 11 year old male students in Kütahya in the academic year 2021-2022, which according to the education statistics of Kütahya was 1000 people. The sample consisted of 30 8 to 11 year old male students in Kütahya who had low scores (1 to 2.33) in the Physical Activity Questionnaire (PAQ-C) and high scores in the Inactive Researcher Questionnaire. The available method was selected and randomly divided into two groups of experimental (virtual physical education) and control (each group of 15 people).

Criteria for entering the group were: 1: 8 to 11 years old; 2: having low scores in the physical activity questionnaire and high scores in the researcher-made inactivity questionnaire; 3: Lack of physical disability; 4: Lack of specific diseases such as cardiovascular disease, hypertension, diabetes, anemia, etc. and 5: Conscious and voluntary satisfaction of participating in meetings and criteria for exclusion from the present study, 1: Lack of motivation and interest, 2: Absence from meetings More than one session and 3: having specific diseases such as cardiovascular disease, hypertension, diabetes, anemia, etc. and 4: the occurrence of specific problems during the study was considered.

After receiving a letter of introduction from the university and obtaining a license from the Education of Kütahya and coordination with school principals, and obtaining informed consent from the parents of students, it was decided that the selected children (it should be noted that first physical activity questionnaires and low  $\alpha$  An online mobility was designed on the primary education site and provided to schools and all 8 to 11 year old male students in Kütahya those who wished to complete the questionnaire and among them (about 400 people), students Who met the inclusion criteria; were invited to study during the telephone call) to be present virtually at the appointed time via WhatsApp video call. In the introductory session, after establishing the researcher with the participants, the students' questions were answered and how to complete the desired physical activity and sedentary questionnaires was explained. After performing the pre-test (physical activity and sedentary questionnaires), an agreement was reached on the date of the next sessions and 30 students aged 8 to 11 who met the inclusion criteria were randomly divided into 2 groups of 15 (virtual education). : Watching video models and teaching the basic concepts of physical activity) and control groups.

Then the experimental group for 18 sessions and two 45-minute sessions each week of defined activities such as teaching the concepts of physical activity (such as definitions of physical fitness factors related to health and fitness, related to skill performance) that are appropriate to the understanding And the children 's literacy was expressed verbally in the form of pictures and figures, as well as viewing selected video models (including basic and motor skills) online, while the control group performed normal daily tasks. And all the mentioned tutorials were done virtually and online through WhatsApp program and all the tutorials were presented in PowerPoint format with

pictures. Homework related to each session will be provided for participants in the experimental groups. On the same day, the subjects' homework was sent to the researcher through WhatsApp and reviewed in the next sessions. At the end of the training sessions, post-test (physical activity and sedentary questionnaires) was measured in both groups (experimental and control groups). It should be noted that in order to comply with the ethical principles of the research, after both post-test groups (physical activity and sedentary questionnaires) were performed, the mentioned trainings were designed for the group due to corona virus sent to children's health and control group.

The following tools have been used to collect information:

**The physical activity questionnaire for older children-PAQ-C:** PAQ-C questionnaire was used to assess the level of physical activity. PAQ-C is a standard 9-item questionnaire to measure the level of physical activity of 8 to 14 year olds in and out of school. This questionnaire, by scoring the level of physical activity of students, determines it with a score from 1 to 5. In this study, physical activity scores ranged from 1 to 2.33 as a low level of physical activity, scores between 2.34 and 3.66 as a moderate level of physical activity, and scores above 3.67 to 5 as a high level. Physical activity was classified [27]. In Wang et al. [28], Cronbach's alpha coefficient ( $\alpha = 0.79$ ), combined reliability value ( $\rho = 0.81$ ) and intra-class correlation coefficient ( $\alpha = 0.82$ ) indicate satisfactory reliability of PAQ-C score and had acceptable validity in children.

**Low mobility questionnaire:** A researcher-made questionnaire consisting of 10 questions was used to assess the inactivity of children aged 8 to 11 and was assessed in a 5-point Likert scale (strongly disagree to strongly agree). The content validity of the above tool has been approved by 15 professors specializing in nutrition and sports management. The total reliability of the questionnaire with Cronbach's alpha was 0.83.

**Intervention method:** Virtual training (watching video models and teaching the basic concepts of physical activity)

For the experimental group, virtual training of physical education (teaching the concepts of physical activity and selected video models) for 18 sessions and 9 weeks (two sessions of 45 minutes each week) for two months on specific days and hours.

For children in the first two sessions, to perform pre-test, communication and conceptualization and the need to use virtual physical education training based on the document of fundamental change and teaching the concepts of physical activity such as definitions of fitness factors related to health and fitness, related to skills implementation in the form of photos, posters, various video views that are appropriate to the understanding and literacy of the children were expressed verbally.

Then the third and fourth sessions, pointing to the benefits of exercise on having a healthy lifestyle during the Covid-19 era and having adequate mobility and adequate physical activity (the World Health Organization recommends at least 60 minutes of intense to moderate physical activity per day for children and adolescents ) And

also emphasized on having a healthy and adequate nutrition (boiled eggs, lentils, cheese and walnuts, etc.).

During sessions 5 to 11, first to general warm-up (including walking, jogging, stretching and warming up all joints and muscles) and specific (warm-up of shoulder muscles, leg muscles, wrist, neck muscles) and finally exercises. Each session was followed by cooling-down movements and then health-related fitness exercises, including 1: Aerobic endurance exercises (rope, running, going up and down stairs, jogging, mountaineering and butterfly movements, and raising the knees). ; 2: flexibility movements (maximum individual traction); 3: Movements for muscular endurance (ability of muscles to perform work for a long time) and 3: Movements for strength (ability of muscles to produce maximum force) that are virtually watched by watching various videos and if necessary through PowerPoint and In addition, the key points of safety, health and basic movement in detail and in the desired formats (photos, posters, various video views) and timely and correct feedback in case of doing homework in each session were provided.

During sessions 12 to 17, in addition to the initial warm-up, perform fitness-related exercises, for example 1: Performing movements for agility (ability to change direction, change posture, and respond appropriately); 2: Perform movements for balance (maintaining the center of gravity at the level of reliance); 3: Performing movements for coordination (cooperation of sensory, neural and coordination muscles in sports) and 4: Performing movements for speed (ability to perform movements in the shortest possible time) which is done virtually by watching various videos and, if necessary, Through PowerPoint and at the same time, expressing the key points of safety, health and basic movement in precise details and in the desired formats (photos, posters, various video views) and timely and correct feedback in case of doing homework was given in each session. At the end of each session, recovery exercises were performed.

During the 18th session, children were encouraged to perform challenging and play-based movements by watching the video model, and while sending the results, health messages were sent to the students along with the song, and then all children were pre-tested. .

Finally, the data were analyzed using SPSS-20 statistical software. In the data description section of mean and standard deviation and in the inferential section of multivariate analysis of covariance test with assumptions of normal distribution of scores through Shapiro-Wilk test, assumption of homogeneity of regression slope using group interaction \* Pre-test and Levin test for homogeneity error and The dependent variable is used in the groups.

## RESULT

Table 1 presents descriptive findings (mean and standard deviation) related to physical activity and sedentary scores before and after training for research groups.

Shapiro-Wilk test was used to evaluate the normality of score distribution. The results showed that all variables in both pre-test and post-test in the control and experimental groups follow the normal distribution ( $p < 0.05$ ).

Table 1: Descriptive characteristics of physical activity and sedentary variables in the sample in the experimental and control groups in pre-test and post-test

Variables	Group	Pre-test		Post-test		Modified Mean
		Mean	St. dev.	Mean	St. dev.	
Physical Activity	Experimental	1.75	0.39	2.55	0.58	2.57
	Control	1.77	0.35	1.98	0.44	1.95
Sedentary	Experimental	3.91	0.44	3.30	0.42	3.25
	Control	3.79	0.43	3.59	0.37	3.64

Table 2: Evaluation of normal distribution of physical activity and sedentary data using Shapiro-Wilk test

Variables	Group	Pre-test		Post-test	
		Shapiro-Wilk	Sig.	Shapiro-Wilk	Sig.
Physical Activity	Experimental	0.94	0.383	0.947	0.473
	Control	0.923	0.217	0.941	0.395
Sedentary	Experimental	0.901	0.097	0.926	0.235
	Control	0.95	0.523	0.913	0.151

Table 3: Results of the assumption of homogeneity of regression slope for physical activity and sedentary in the study groups

Variable	Source changes	Total squares	df	Average squares	F	Sig.
Physical Activity	Group effect*Pretest	0.016	1	0.016	0.199	0.659
	Error	1.931	24	0.08		
Sedentary	Group effect*Posttest	0.002	1	0.002	0.068	0.796
	Error	0.593	24	0.025		

The homogeneity assumption of the regression slope was investigated using the interaction of the pretest \* group. The results showed that the homogeneity assumption of regression slope for physical and sedentary activity is established ( $p < 0.05$ ).

Table 4: Box test results to evaluate the homogeneity of variance-covariance matrix of physical activity and sedentary

M box	F	Df1	Df2	Sig.
1.158	0.356	3	141120	0.785

The results of m-box test indicate that the assumption of homogeneity of the variance-covariance matrix of physical activity and inactivity is also established ( $p < 0.05$ ).

Table 5: Levin test results for equalization of variance error of physical activity and sedentary in the studied groups

Variable	F	Df1	Df2	Sig.
Posttest Physical Activity	0.239	1	28	0.629
Posttest sedentary	1.735	1	28	0.198

The results show that the variance error of physical activity and inactivity in the control and experimental

groups is not significant ( $p < 0.05$ ). Therefore, all assumptions of covariance analysis are multivariate.

Table 6: Results of multivariate analysis of covariance (MANCOVA) for physical activity and inactivity in the study groups

Test name	Test value	F	Df of hypotheses	Df of error	Sig.	Eta
Lambda Wilkes	0.243	38.837	2	25	0.001	0.757

In multivariate analysis of covariance, first the general multivariate variable, which consists of a linear combination of physical activity and sedentary activity, is compared between the two groups, and then univariate tests are performed. The Wilkes lambda approach was used for multivariate comparison. The value of Wilkes lambda is equal to 0.24, the value of F is equal to 38.84 and the significance level is equal to 0.001. Due to the smaller significance level of 0.05, it is concluded that the linear combination of physical activity and sedentary lifestyle is significantly different in the study groups.

Table 7: Results of analysis of covariance to compare physical activity and sedentary activity after the test in the study groups

Source of changes	Independent Variable	Total squares	df	Average squares	F	Sig.	Eta
Effect of group	Physical Activity	2.847	1	2.847	36.518	0.001	0.584
	Sedentary	1.145	1	1.145	49.885	0.001	0.657
Effect of Error	Physical Activity	2.027	26	0.078			
	Sedentary	0.597	26	0.023			

The results of univariate comparisons indicate that the level of physical activity of elementary students in the experimental and control groups is significantly different ( $p = 0.001$ ,  $F = 36.52$ ). The intensity of the effect is equal to 0.58. The amount of physical activity in the experimental group ( $m = 2.57$ ) was significantly higher than the control group ( $m = 1.95$ ). There is also a significant difference in

the inactivity of elementary students in the experimental and control groups ( $p = 0.001$ ,  $F = 49.89$ ). The intensity of the effect is equal to 0.66. The rate of inactivity in the experimental group ( $m = 3.25$ ) was significantly lower than the control group ( $m = 3.64$ ). Therefore, it is concluded that virtual physical education has a significant effect on

increasing physical activity and reducing inactivity of elementary students in the Covid-19 era (Table 7).

## DISCUSSION

The purpose of this study was to investigate the effect of virtual physical education training on physical activity and reduce inactivity of elementary students in the Covid-19 period. The results of univariate analysis of covariance showed that the amount of physical activity in the experimental group compared to the control group Post-test has increased significantly. The intensity of the effect is equal to 0.58. There is no report in the research literature on the effect of virtual physical education on increasing the physical activity of 8 to 11 year old male students; But the results obtained by the results of studies by Webster et al. [15], Ahmadi et al. [17], López-Carril et al. [18] and Memari et al. [29] show that strengthening, developing and implementing high quality programs, Online physical education and school-based physical activity programs for children and adolescents through the intervention of physical activity stakeholders have played a significant role in promoting physical activity and psychological well-being in students and also, according to the results of AbouElmagd [20] research that exercises Regular physical activity plays an important role in strengthening the immune system and bone health during Covid-19.

But Chan et al. [30] reported that most teachers found that online professional sports lessons were not effective in improving motor skills and physical activity levels, and the main reasons were "lack of practical training", "lack of motivation / interest in students' learning". And "was the limitation of interpersonal relationships. Second, the verbs; Most teachers encountered problems in online teaching, inconsistent with major problems including "limited interpersonal interactions" and "difficulty in motivating / motivating students to learn."

Explaining this research finding, it can be said that the widespread limitations of COVID-19 had a negative effect on the physical activity of 8 to 12 year old students, this issue was considered as a public health concern. School, sports, and government officials sought effective strategies to promote PA in school children during and after Covid-19 [31]. Because children and adolescents spend a significant portion of the day in school in recent years, school-based interventions using an optimal strategy were the most feasible way to deal with low levels of physical activity, but in the coronary age, Children's physical activity and organized sports are limited [32]. In contrast, physical activity has been widely recommended by national governments over time to maintain a healthy lifestyle [7].

Under such circumstances, education specialists in the field of physical education believe that traditional learning patterns cannot meet the needs and challenges arising from new and high-speed technologies. Thus, with the advancement of information and communication technology, e-learning has emerged as a new model in modern education and provides training goals and programs with the help of information and communication technology, which are the tools needed to meet the challenges. It is educational in today's world [33]. The American Association of Health and Physical Education (SHAPE) states that physical education offered online

should have the same purpose and results as traditional, face-to-face physical education. Daum [35] also argues that online physical education (OLPE) bears the same responsibilities as traditional programs that are equally well developed and accessible in terms of providing fair learning experiences. Accordingly, virtual practice exercises during Covid-19 are essential to develop appropriate physical education strategies to encourage the initiation, maintenance, and reinforcement of digital media physical activity behaviors, such as mobile, web fitness programs. Health related sites can offer new things. Online physical activity intervention strategies can be effective in improving physical activity [36].

Accordingly, there is no difference between virtual and non-virtual education, but there are significant differences in the method of achieving the goals, because with the change and variety of new educational media in the age of technology, no doubt to implement specific goals of the training course. Physically, different platforms and different formats should be used in presenting the content of physical education lessons so that the needs of today's audience are met at the same time as the interests of education [14]. Therefore, considering the management requirements (planning, creativity, motivation, supervision, feedback, evaluation), attitude requirements (community attitude, family attitude, students' attitude), support requirements (teacher support, school support, support Families, education support, expert support and heads) and virtual learning process requirements (virtual education, virtual education tools, sports activities and proper nutrition at home, virtual sports competitions, virtual classroom management, virtual teaching principles It is possible to develop an effective model for the e-learning program of school physical education lessons in critical situations such as the Quidd-19 epidemic, which will increase physical activity and reduce obesity in children, and pave the way for a healthy and active lifestyle in knowledge of learners [21].

In this study, physical education virtual education while referring to active lifestyle and healthy nutrition, teaching the concepts of physical activity (such as definitions of physical fitness factors related to health and fitness (strength, muscle endurance, flexibility and aerobic endurance) and related to performance Skills: agility, balance, coordination and speed), refers to general warm-up (including walking, jogging, stretching and warming up all joints and muscles) and specific (warm-up of shoulder muscles, leg muscles, wrist and neck muscles) And performing basic and physical movement skills by viewing video models with detailed details and in the desired formats (photos, posters, various video views) and giving timely and correct feedback in case of doing homework incorrectly and doing the movements correctly again. The selection played an important role in increasing the physical activity of 8 to 11 year old students in the experimental group. In general, it can be said that learning through observation or patterning is a technique in teaching motor skills and patterned behavior can be presented as a live model, video model, perceptual representation, or illustration [37].

The presentation of the video model of motor skills in this research is due to the fact that the researcher believes

that the student receives more information in a shorter time than verbal explanation, and without a doubt one of the most important factors in learning movements is demonstrating skills which was effective in the time of Corona [38].

Another finding of this study was that the results of univariate analysis of covariance showed that the rate of inactivity in the experimental group compared to the control group in the post-test was significantly reduced. The intensity of the effect is equal to 0.66. On the effect of virtual education of physical education based on the document of fundamental change on the reduction of inactivity of male students aged 8 to 11 years, no report has been observed in the research literature; However, the results obtained by the results of studies by Vandoni et al [39], Gao et al [16] and Azkan et al [19] that virtual physical activity training and training through distance education information network play an important role in reducing obesity and Increased motor, cognitive, and psychological outcomes in the elderly are consistent with increased mobility and physical activity of students during the COVID-19 epidemic.

Research inconsistent with the present study was not found to negate the effect of virtual physical education training on reducing students' inactivity.

In explaining these results, it can be said that the Covid-19 epidemic has received special attention in terms of its effect on food intake, sedentary behaviors and level of physical activity [40]. As a result, children became sedentary due to the change in educational style towards distance education, as well as the prevention of their activities outdoors, which affects their level of health and leads to strategic and scientific programs to prevent We need physical and behavioral complications due to inactivity of this disease [41]. However, due to the problem created in the world education system during the Corona, virtual education is the best way of education [13]; Because this type of training has removed many of the usual restrictions in physical education and by adding simulated conditions, training assistance has provided an ideal and ideal environment for the transfer of educational information, and in such circumstances, our dear Turkey in Efforts to teach online courses, especially physical education, aim to promote the basic concepts of children's physical activity, reduce sedentary lifestyle and their healthy lifestyle [21].

Accordingly, some researchers [42, 43] emphasize that a virtual structured physical exercise program for students can be a strategy to reduce inactivity, control overweight and obesity in children during quarantine, and improving their physical capacities is conditional on their speed (jumping). In this study, aerobic endurance exercises such as rope, running, going up and down stairs, jumping, mountaineering and butterfly movements, and raising the knee, as well as performing agile movements that are virtualized through various video views and giving feedback on If the movements were wrong, they were presented for two months on the students' inactivity; It had a positive effect on reducing the inactivity of the experimental group and caused agility, cardiac endurance and increased core strength of 8 to 11 year old students. Previous studies [44-46] have shown that aerobic

endurance training, including rope training and running, on the indicators of aerobic strength, body composition, cardiorespiratory endurance, muscle endurance, flexibility and the agility of obese 9- to 11-year-old students has a positive effect on health-related physical fitness.

Therefore, in previous studies, only the reduction of physical activity and inactivity of students during the corona has been studied and a virtual physical education program of the country and can be used for indigenous, cultural conditions and exclusively for all learners in all parts of the country. In particular, East Azarbaijan province was not studied, and the study of the effect of virtual physical education training on physical activity and the reduction of inactivity of elementary students in the Covid-19 era was the strength of this study. One of the limitations of the present study is that it is homosexual and it is not possible to implement follow-up programs in order to pursue effectiveness over time.

## CONCLUSION

In general, it can be concluded that virtual physical training (watching video models and teaching the basic concepts of physical activity) is effective in increasing physical activity and reducing inactivity in 8 to 11 year old male students during the Quaid-19 era. According to the results of this study and its confirmation through previous research, the use of virtual physical education training (watching video models and teaching the concepts of physical activity) during the Covid-19 epidemic is suggested as an effective learning program from All primary schools in the country with the aim of guiding and assisting physical education educators and teachers to increase physical activity and reduce sedentary lifestyle and have a healthy and active lifestyle of male and female students, should be considered by physical education officials.

**Ethical considerations:** All authors declare that in this research, all relevant ethical principles, including the confidentiality of questionnaires, the informed consent of the participants in the research, and the right to withdraw from the research have been observed.

**Authors' contribution:** Authors contributed equally in preparing this article.

**Conflict of interest :**The authors declared no conflict of interest.

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