

# Investigation of secondary school students' participation in physical education lessons with distance education in the pandemic process

Tevfik Cem Akalın\* and Mustafa Gümüş

School of Physical Education and Sports, Zonguldak Bülent Ecevit University, Zonguldak, Turkey.

---

## ABSTRACT

Considering the possibilities and limitations of distance education, it is important to create distance education systems that can benefit the physical education lessons at the highest level and to transform it into more qualified ones. Therefore, the aim of this study is to understand the distance education problems in the teaching of the physical education lesson and the participation and orientation of the secondary school students, to investigate the developments related to the physical education lesson and to make a situation assessment. The participants of the study are secondary school students (n = 403) who were educated in Private Schools that provide synchronous education in pandemic process and have "morning sports" or "physical education lessons" in their curriculum. As a data collection tool, a closed-ended questionnaire consisting of 15 questions was used. It was determined that there is a statistically significant difference between students' level of participation in sports lessons and all other variables ( $p < 0.001$ ). As a result, it was seen that families and students did not have the habit of doing sports at the desired level in normal time. It suggests that there are some problems in the processing and application of this course. While the lesson is expected to become much more important, especially in this dormant and inactive period, it is not an expected situation to receive this level of interest.

**Keywords:** Distance education, physical education, secondary school student, covid-19.

---

\*Corresponding author. E-mail: tc.akalin@hotmail.com. Tel: 90-532-341-4259.

---

## INTRODUCTION

In December of 2019, there was an outbreak of a severe acute respiratory syndrome caused by the Coronavirus 2 (SARS-CoV-2 or COVID-19) in Wuhan, Hubei Province, China. The virus rapidly spread across the country and then into the whole world (Zu et al., 2020), causing an unprecedented pandemic (WHO, 2020a), forcing governments to impose an almost global quarantine. It has been declared as a global pandemic by the World Health Organization (WHO, 2020b) on March 11, 2020. The deep effects and reflections of the crisis situation created by the pandemic on health, economic, psychological, social life and education continue all over the world, and there is no definite data regarding when it will end.

Covid-19 pandemic has been caused significant changes in economy, social life and education practices,

especially health at global level and caused effects. Efforts to reduce the spread of the COVID-19 virus among the younger and adult population has prompted widespread closure of schools, colleges, universities, and other educational institutions in many countries. According to the data of the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020), as of 7th April 2020, schools have been closed in 188 countries due to the Covid-19 pandemic. This situation has been affected approximately 92% of the student population (1,576,021,818 students) worldwide.

In any case, school closure poses unprecedented challenges to governments and teachers, students, caregivers and parents to ensure continuity of learning (Chang, and Satako, 2020). The closure of schools forces countries to innovate in order to keep the

education system alive. A new education system is being formed all over the world, countries find uninterrupted solutions to continue nonstop education, but the quality of learning largely depends on the level and quality of digital access (Özer and Eren Suna, 2020).

One of the most important priority targets for all countries where the Covid-19 pandemic is seen has been to ensure the continuity of education without interruption. In this process, it is observed that countries generally try to use the existing distance education opportunities supported by different technological infrastructures (Ertuğ, 2020).

With Covid 19, the first pandemic of this century, distance education has suddenly entered the agenda of the whole world. In this process, educational institutions in Turkey have been suspended on March 16, 2020 the first stage, at the same time trainings level 3 TV Channel and Education Information Network (EBA) context of open and distance education applications have been decided to supplement and substitute the training on continuation. In addition, education was suspended in the Higher Education system on March 12, 2020, and it was decided to continue the spring semester of the 2019-2020 academic year with a fully open and distance learning system as of March 23, 2020.

Distance education, in its traditional definition, can be understood as the physical separation of the student and the instructor, at least in certain stages of the learning process (Guri-Rosenblit, and Gros, 2011). Distance education, is a teaching model that is usually asynchronous and always distributed. That is, there is no need to attend classes in a specific physical environment and usually doesn't at occur particular time. The student receives and accesses the content to engage with their studies, then complete and transmit evaluation and often collaborative activities, and can ask their teachers questions through mediated means: initially by traditional mail, telephone, fax, and during the last decades, through various online tools (Alfonso, 2003, Sangrà et al., 2011).

When it comes to distance education, common concepts have come up in recent years. Concepts such as open education, online learning, e-learning, distance education, internet-based education, distance education, web-based education, online education, non-formal education, flexible learning and virtual education can be considered as examples. However, these concepts generally express similar features with each other.

Due to the Covid-19 pandemic, the lessons have been conducted by the Ministry of National Education within the scope of distance education practices at primary, secondary and high school levels over 3 TV channels belonging to EBA and TRT. It is seen that 10 different lessons for primary and secondary school levels and 22 different lessons for high school level are carried out in the form of distance education on TV. It is noteworthy that the courses conducted generally consist of basic courses (Turkish, Mathematics, Physics, Chemistry,

Biology, etc.), while other courses (Painting, Visual Arts, etc.) are not included in the application (Ertuğ, 2020).

In its most general and known definition, education is defined as the process of deliberately creating changes in an individual's behavior through his own life (Ertürk, 1994). One of the most basic principles of education is to raise people as a whole with their mind and body aspects. Undoubtedly, the physical and mental health and happiness of individuals are some of the leading conditions of social development. Therefore, physical education lesson includes the goals that become evident in the form of gaining healthy activity habits and maintaining the most appropriate physical fitness throughout life (Petray, 1989). Again, the general purpose of education is to make a human being a productive individual by providing mental and physical development. Physical education course aims to provide students' physical, spiritual and intellectual development in accordance with the basic principles determined by the Ministry of National Education (MEB, 2009).

It is known that secondary school students, especially those in their growing age, remain inactive through quarantine, isolation or restricted spaces that have entered our lives with the pandemic in order to stay healthy during this period. For this reason, physical education lessons are great importance for these distance education students. Considering the possibilities and limitations of distance education, it is important to create distance education systems that can benefit from the physical education lessons at the highest level and to transform it into more qualified ones. Therefore, the aim of this study is to understand the distance education problems in the teaching of the physical education lesson and the participation and orientation of the secondary school students, to investigate the developments related to the physical education lesson and to make a situation assessment.

## **METHODOLOGY**

### **Research model**

This research was modeled according to the descriptive survey model. Participant opinions were received about the current situation by collecting data without making any change in their current features. Descriptive methods are the method aiming to describe a situation that existed in the past or still exist as they are. Therefore, as investigating the readiness levels of sports science faculty students towards e-learning were aimed and descriptive survey model was applied in this study (Karasar, 2007).

### **The universe and sample of the research**

The universe of the study consisted of secondary school

students who were educated in Private Schools that provide synchronous education in the province of Zonguldak and its districts in the spring semester of the 2019-2020 academic year (pandemic process) and have "morning sports" or "physical education lessons" in their curriculum. It was aimed to reach the entire population.

The sample of the study consisted of 403 parents of students who voluntarily accepted to participate in the study and who fully completed the questionnaire prepared by accessing the questionnaire sent from the computer-aided internet environment. The demographic characteristics of the students are presented in Table 1.

**Table 1.** Demographic characteristics of the secondary school students' participating in the study.

<b>Variables (n = 476)</b>		<b>n</b>	<b>%</b>
Family education level	Undergraduate and above	226	56.08
	High school and equivalent	124	30.77
	Primary-Secondary school	53	13.15
Family income level	Top	233	57.82
	Middle	123	30.52
	Lower	47	11.66
Family sports status	Regular	64	15.88
	Irregular	116	28.78
	Never	223	55.33
Student doing regular sports before the pandemic	Regular	92	22.83
	Irregular	96	23.82
	Never	215	53.35
Participation in physical education lesson in distance education	Regular attends	62	15.38
	Irregular attends	69	17.12
	Not participate	272	67.49
Participation in music-art lessons in distance education	Regular attends	67	16.63
	Irregular attends	70	17.37
	Not participate	266	66.00
Participation in necessary lessons in distance education	Regular attends	344	85.36
	Irregular attends	40	9.93
	Not participate	19	4.71
Reason for student not attending physical education lesson	Early morning	98	36.03
	Not important	69	25.37
	No habit	105	38.60
Family's opinion on physical education lesson	Important	219	54.34
	Unstable	119	29.53
	Insignificant	65	16.13
Family's opinion on the effect of physical education lessons on health	Effective	214	53.10
	Unstable	146	36.23
	No agree	43	10.67

### Data collection

This cross-sectional study was carried out with a

structured questionnaire applied to the parents of intermediate school students who were educated in private schools during the period when some restrictions

were experienced during the COVID-19 pandemic and who received "morning sports" or "physical education lessons" synchronously. Out of 800 questionnaires submitted, 440 were returned, 37 of them were excluded from the study because they were not filled properly. The recycling rate of the questionnaires was 55%.

As a data collection tool, a closed-ended questionnaire consisting of 15 questions was used which addresses socio-demographic data and behaviors and attitudes related to courses in the distance education process during the Covid-19 pandemic period and questions to the identify solution suggestions of students and parents to these problems. Only one option was allowed to answer all closed-ended questions.

Relevant literature was studied before preparing the questionnaire. The questionnaire has been prepared in accordance with the purpose as a whole, consists of clear and understandable questions about the individual features of the whole problem, relatively specific and independent from each other, and each question is related to the subject under investigation. At the beginning of the survey, a statement was made about the instructions for filling out the questionnaire and the participants were informed that the information provided by the people will not be shared with anyone.

### Research application

The questionnaire was uploaded to <http://www.surveey.com/> and the link address was sent to parents of all students via e-mail and WhatsApp groups. On the landing page of the questionnaire, an informed consent page was presented to the parents of the students, and the parents of the students who accepted it were able to continue the survey. The surveys were collected between May 11 and June 1, 2020.

### Statistical analysis

Data were analyzed with the SPSS for Windows 21.0 software (SPSS Inc., Chicago, IL, USA). Descriptive statistics were given as "mean  $\pm$  standard deviation" and

frequency distributions. Chi-square test was used for comparison among groups, analysis results were evaluated at 95% confidence interval.

## RESULTS

This section includes the statistical analysis and interpretation of the data obtained as a result of the application of data collection tools (students' demographic characteristics and survey results) of secondary school students and their parents.

When the demographic data are examined, it is seen that the majority of the families ( $n = 403$ ) have undergraduate or higher education status (56.08%) and rate their income status as the upper income group (57.82%). It was determined that most of the families participating in the study did not have sports habits (55.33%) and the children of these families did not do sports regularly (53.3%) before the pandemic (Table 1)

When examining students' participation in lessons through distance education, physical education lesson, art and music lessons and other lessons, were examined in three groups. The lesson with the lowest participation in the study was found to be physical education (67.49%). Although the participation in Art and Music lessons is slightly higher than the participation in Physical Education lessons, the rate of those who do not attend the lessons in general is close to the physical education lessons (66%). The rate of those who did not attend other lessons is reasonable (4.71%) (Table 2).

When the students' participation in physical education lessons were examined, it was found that the family education status of the regular attendees was undergraduate and higher with 24.78%, 25.32% had upper family income and 42.19% of them did regular sports. Furthermore, according to the students' participation in physical education lessons, it was determined that 25% of their families did sports before the pandemic, 18.72% consider physical education lesson important in the distance education process, and 21.50% think that physical education lesson has an effect on being healthy (Table 3).

**Table 2.** Students' participation in lessons through distance education.

Variables		Regular attends		Irregular attends		Not participate	
		n	%	n	%	n	%
Courses attended through distance education	Physical education	62	15.38	69	17.12	272	67.49
	Art-Music	67	16.63	70	17.37	266	66
	Other courses	344	85.36	40	9.93	19	4.71

When examining the students' status of not attending physical education lessons, their family education status

was secondary school-primary school with 86.79%, 95.12% had middle family income, 73.28% did sports

**Table 3.** Distribution of students' participation in physical education lessons in terms of various variables.

Variables		n	Regular attends (n=62)		Irregular attends (n=69)		Not participate (n=272)		p
			n	%	n	%	n	%	
			Family education level	Undergraduate and above	226	56	24.78	42	
	High school and equivalent	124	4	3.23	22	17.74	98	79.03	
	Primary-Secondary school	53	2	3.77	5	9.43	46	86.79	
Family income level	Top	233	59	25.32	59	25.32	115	49.36	0.001*
	Middle	123	1	0.81	5	4.07	117	95.12	
	Lower	47	2	4.26	5	10.64	40	85.11	
Family sports status	Regular	64	27	42.19	8	12.50	29	45.31	0.001*
	Irregular	116	16	13.79	15	12.93	85	73.28	
	Never	223	19	8.52	46	20.63	158	70.85	
Student doing regular sports before the pandemic	Regular	92	23	25.00	26	28.26	43	46.74	0.001*
	Irregular	96	20	20.83	23	23.96	53	55.21	
	Never	215	19	8.84	20	9.30	176	81.86	
Family's opinion on physical education lesson	Important	219	41	18.72	42	19.18	136	62.10	0.001*
	Unstable	119	14	11.76	5	4.20	100	84.03	
	Insignificant	65	7	10.77	22	33.85	36	55.38	
Family's opinion on the effect of physical education lessons on health	Effective	214	46	21.50	34	15.89	134	62.62	0.001*
	Unstable	146	13	8.90	5	3.42	128	87.67	
	No agree	43	3	6.98	30	69.77	10	23.26	
Reason for student not attending physical education lesson	Early morning	98	-	-	-	-	98	36.03	0.001*
	Not Important	69	-	-	-	-	69	25.37	
	No Habit	105	-	-	-	-	105	38.60	

\*p &lt; 0.001.

irregularly, 81.86% did not do sports before the pandemic, and 84.03% of the families it was determined that they were undecided about the importance of the distance physical education lesson and 87.67% were undecided about the effect of physical education lesson on health (Table 3). It was determined that there is a statistically significant difference between students' level of participation in sports lessons and all other variables ( $p = 0.001$ ) (Table 3) ( $p < 0.001$ ).

## DISCUSSION

It is seen that most of the families participating in the study (56.08%) have a bachelor's degree or higher education, and they rate their income status as the upper income group (57.82%). Since private schools are paid education, it is natural that most of the families have high income and education levels. However, as an important finding in the situation of the families participating in the

study, it was found that most of these families did not have sports habits (55.33%) and the children of these families did not do sports regularly (53.3%) before the pandemic ( $p < 0.001$ ). It is remarkable that most of the families and students participating in the study did not have a habit of doing sports.

Most of the students who regularly attend the lessons are the children of families with undergraduate and higher degrees (24.78%). Most of the students who do not attend the lessons regularly are from families (86.79%) who are primary-secondary school graduates. ( $p < 0.001$ ) In this case, we can say that family education level is effective in participating in physical education lessons.

Most of the students who regularly attend the classes are the children of families declaring that they belong to the upper income group (25.32%). Most of the students who do not attend the classes regularly are from families (95.12%) who declared that they belong to the middle income group ( $p < 0.001$ ). We can say that the family income level is effective in attending physical education

classes.

Examining the sports status of the family, it is seen that those who do sports regularly in their family (42.19%) also attend classes regularly, and the children of families who do not do sports regularly make up the highest percentage (73.28%). It is noteworthy that most of the children (70.85%) of those who do not do sports in the family do not attend classes either.

It was determined that more than half of the students did not do sports regularly (53.3%) in terms of their regular sports status before the pandemic, and a great majority of the students who did not do sports regularly did not attend physical education lessons (81.86%) during the distance education process. ( $p < 0.001$ ) It can be thought that students who do not have regular sports habits are reluctant to participate in these classes. However, it is a striking result that even the students who stated that they did sports regularly before the pandemic process (46.74%) did not attend physical education classes during the distance education process.

In the studies of Akkuş and Acar (2017), technical problems encountered in synchronous education were tried to be determined and the effects of the problems on the teacher and the learner were determined. The trainers stated that there are problems in terms of disconnection, insufficient content support, problems in voice transmission and less participation in the lessons. The students also stated that there were problems with network connection in most of the synchronous lessons were insufficient in terms of questions and answers, and it was boring due to the lecture.

When the views of the family about the Physical Education lesson were examined, it was seen that more than half of them found the lesson important (54.34%), and even those who found it important were among those who did not attend the lesson (62.10%). On the other hand, those who declared that they were undecided constitute the largest part among those who did not attend the course (84.03%). It proves that there is a problem in the teaching of lesson through distance education.

As the family's opinion about the effect of physical education lesson on health, they also stated that most of the families (53.10%) are effective on being healthy. In addition to this, the result of those who did not attend the lesson were undecided (87.67%), when considered together with the other findings, suggests the fact that there is a problem in terms of the way the lesson is taught or presented. School-based physical activity opportunities are a critical method of engagement to help children perform an average of 60 minutes of physical activity each day. It is very important to provide quality physical education programs by their schools to teach students skills that will enable them to lead and adopt a physically active lifestyle, and to reflect on how quarantine will affect their physical activity levels and health. Promoting motivation, ability, and confidence to participate in physical activity is one goal of effective

physical education programming. Finally, the reasons for students not attending the lessons ( $n = 272$ ) were determined as not having a sports habit (38.60%), being early in the morning (36.03%) and not finding it important (25.37%), respectively.

Tuncer and Bahadır (2017) stated in their study that students had negative views about distance education and that distance education was encouraging memorization. In addition, they concluded that the students complained about the indifference of the instructors who gave the course, had a negative opinion about the instructors, and had problems related to the internet and computers. However, it was determined that students also had positive opinions in terms of not having attendance requirement, comfortable learning environment, and repetition at any time. Kırmacı and Acar (2018), in their study in which students try to identify the problems they experience with distance education stated that students generally they had problems with internet access, they did not know the hours of virtual lessons, the time of the lessons was not appropriate and there were technical problems as they joined the lessons. In addition, the students stated that virtual lessons were boring because they were like topic repetition, and they thought that practice or reinforcement activities could be done in the lessons. Ilgaz (2014) identified the problems faced by participants in synchronous education and offered solutions in the study. It was concluded that the students had problems such as having difficulty communicating with the instructor while using the virtual classroom system, the lessons were short and the lesson times were not suitable for the participants. However, it was determined that it is important in terms of learning that the synchronous sessions are recorded and can be watched later by the participants. It was also stated that the instructor factor was effective in understanding the course.

When examining the students' participation in lessons through distance education, the physical education lesson, which is the subject of our study, was found to be significantly lower than the art and music lessons and other lessons. However, it is thought-provoking that this course, which is in the favorite category of most of the students in the face-to-face education process, has the least participation in the distance education process. The high level of participation in other field lessons suggests that it may be the result of an academic anxiety. However, physical activity facilitates learning. Higher fitness levels, which are the result of continuing engagement in physical activity, are associated with higher grades and test scores compared to those with lower fitness levels. Physical activity also improves concentration and attention, which directly affects learning readiness.

Above all, mobile learning in physical education is developing. Researchers have started to develop or employ mobile tools to conduct teaching or training activities. However, due to its speciality and complexity,

there are differences between physical education and other academic learning activities (Wallhead et al., 2014). Therefore, researchers and relevant instructors need to pay more attention to how to effectively make use of mobile tools or learning strategies to attain good learning effects, or what kind of mobile learning in physical education will be the development trend in the future.

As a result, it was seen that families and students did not have the habit of doing sports at the desired level in normal time. In addition, when the participation rates of other field courses are examined, it is seen that they have very low participation, especially in morning sports or physical education classes, and also in lessons such as art and music, and they are mostly undecided about their usefulness in their participation in these classes. It suggests that there are some problems in the processing and application of this course. While the lesson is expected to become much more important, especially in this dormant and inactive period, it is not an expected situation to receive this level of interest. With the important opportunities and limitations of distance education, it appears to be the most suitable option for continuing education service in the COVID-19 epidemic. Therefore, it will be useful to consider the suggestions below.

## Conclusion

- Courses should be conducted taking into account the digital possibilities of the student.
- Students' digital literacy status should be taken into account.
- Practices that trigger active learning are necessary in the student centered in modern education
- Teacher, student and parent cooperation and communication should be good, it will be beneficial for them to cooperate.
- Support should be provided to teachers and parents in the use of digital tools.
- One of the critical components of distance education is to provide diversity by providing different environments for information gathering. Instead of an asynchronous video, an effort should be made to teach written assignments, speeches, and practical lessons with a synchronous participation, including the academic benefits of physical activity that encourages awareness.
- From time to time, a questionnaire or homework can be added that questions how students are physically active.
- To support physical activity, a simple class competition can be held at home.
- During other long distance learning lessons, students can be encouraged to take a 10-minute break and participate in a physical activity of their choice, and then share it when the class is reunited.
- In contemporary distance education, elements that put the student in the center and support active learning should be used.

## REFERENCES

- Akkuş, İ., and Acar, S. (2017).** Eş zamanlı Öğrenme Ortamlarında Karşılaşılan Teknik Sorunların Öğretici ve Öğrenen Üzerindeki Etkisini Belirlemeye Yönelik Bir Araştırma. İnönü Üniversitesi Eğitim Fakültesi Dergisi, 18(3): 363-376.
- Alfonso, I. (2003).** La educación a distancia. Revista cubana de los profesionales de la información y la comunicación en salud. 11(1): 1-13.
- Chang, G. C., and Satako, Y. (2020).** How are countries addressing the Covid-19 challenges in education? A snapshot of policy measures. Available online: <https://gemreportunesco.wordpress.com/2020/03/24/how-are-countries-addressing-the-covid-19-challenges-in-education-a-snapshot-of-policy-measures/> (accessed on 27 July 2020).
- Ertuğ, C. (2020).** Coronavirüs (Covid-19) pandemisi ve pedagojik yansımaları: Türkiye'de açık ve uzaktan eğitim uygulamaları. Açıköğretim Uygulamaları ve Araştırmaları Dergisi, 6(2): 11-53.
- Ertürk, S. (1994).** Eğitimde Program Geliştirme. Ankara: Meteksan A.Ş.
- Guri-Rosenblit, S., and Gros, B. (2011).** e-Learning: confusing terminology, research gaps and inherent challenges. Journal of Distance Education, 25(1): 1-17.
- İlgaz, H. (2014).** Uzaktan eğitim öğrencilerinin eşzamanlı öğrenme uygulamalarında karşılaştıkları sorunlar ve çözüm önerileri. Eğitim Bilimleri ve Uygulama, 13(26): 187-204.
- Kırmacı, Ö., and Acar, S. (2018).** Kampüs Öğrencilerinin Eşzamanlı Uzaktan Eğitimde Karşılaştıkları Sorunlar. Eğitimde Kuram ve Uygulama, 14(3): 276-291.
- Karasar, N. (2007).** Bilimsel araştırma yöntemi. Nobel Yayın Dağıtım
- MEB, (2009).** Ortaöğretim beden eğitimi dersi öğretim programı (9 – 12. Sınıflar). Ankara: Milli Eğitim Bakanlığı Yayınları
- Özer, M., and Eren Suna, H. (2020).** Ed. Şeker, M., Özer, A., and Korkut, C., Küresel Salgının Anatomisi. "COVID-19 Salgını ve Eğitim", Türkiye Bilimler Akademisi, 171-192.
- Petray, C. K. (1989).** Organizing Physical Fitness Assessment (Grades K-2), Journal of Physical Education, Recreation and Dance, 60(6): 57-60.
- Sangrà, A., Vlachopoulos, D., and Cabrera, N. (2011).** Building an inclusive definition of e-Learning: An approach to the conceptual framework. The International Review of Research in Open and Distance Learning, 13(2): 145-159.
- Tuncer, M., and Bahadır, F. (2017).** Uzaktan Eğitim Programlarının Bu Programlarda Öğrenim Gören Öğrenci Görüşlerine Göre Değerlendirilmesi. Journal of Educational Reflections, 1(2): 29-38.
- UNESCO (2020).** COVID-19 educational disruption and response, Available online: <https://en.unesco.org/covid19/educationresponse>, (accessed on 24 July 2020).
- Wallhead, T. L., Garn, A. C., and Vidoni, C. (2014).** Effect of a sport education program on motivation for physical education and leisure-time physical activity. Research Quarterly for Exercise and Sport, 85(4): 478-487.
- WHO (2020a).** World Health Organization. Situation Report 65. 2020. Available online: [https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200325-sitrep-65-covid-19.pdf?sfvrsn=2b74edd8\\_2](https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200325-sitrep-65-covid-19.pdf?sfvrsn=2b74edd8_2) (accessed on 24 July 2020).
- WHO (2020b).** World Health Organization. Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020, Available online: <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19--11-march-2020>, (accessed on 27 July 2020).
- Zu, Z. Y., Jiang, M. D., Xu, P. P., Chen, W., Ni, Q. Q., Lu, G. M., and Zhang, L. J. (2020).** Coronavirus Disease 2019 (COVID-19): A Perspective from China. Radiology, 21: 200490.

---

**Citation:** Akalın, T. C., and Gümüş, M. (2020). Investigation of secondary school students' participation in physical education lessons with distance education in the pandemic process. African Educational Research Journal, 8(2): S266-S272.

---