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RESEARCH ARTICLE

The Effectiveness of Calistenic Exercise Training in Adolescents Receiving Online Education During COVID-19 Pandemic

Kemal ALTUNTAŞ[1], Nihan ÖZÜNLÜ PEKYAVAŞ[2], Oya ÜMİT YEMİŞÇİ[3] and Halime Ceren TEZEREN[4*]

[1]Baskent University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Ankara/Turkey
[2]Baskent University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Ankara/Turkey
[3]Baskent University, Faculty of Medicine, Department of Physical Therapy and Rehabilitation, Ankara/Turkey
[4]Baskent University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Ankara/Turkey
*Corresponding author: ceren_yldz19@hotmail.com

Abstract

Background: During the Covid-19 pandemic, it was observed that the level of physical activity decreased with social isolation. Our aim in this study was to examine the effectiveness of calisthenic exercise training on physical activity, quality of life, sleep, anxiety and depression levels in adolescents. **Methods:** Thirty-eight adolescent students who had been studying full-time online education during the pandemic were randomized into two groups; calisthenic exercise group (n=19, mean age= 12,84±0,37, BMI= 21,23± 3,66) and control group (n=19, mean age=13,05±0,84,BMI=21,27±2,27). Calisthenic exercise group received calisthenic exercise training for 8 weeks through the videoconferans and control group didnt receive any exercise treatment. The levels of physical activity were measured by the short form of the International Physical Activity Questionnaire (IPAQ). The Pittsburgh Sleep Quality Index (PSQI) was used to assess sleep quality. Quality of life was assessed using Pediatric Quality of Life Questionnaire Short Form (PedsQL-SF). The Beck Anxiety Scale (BAS) and Reynolds Adolescent Depression Scale (RADS) were used to determine the level of anxiety. **Results:** There was a statistically significant improvement in physical activity levels (IPAQ p=0.049), anxiety depression (BAS and RADS P=0.007), quality of life (PedsQL-SFp= 0.012) and sleep (PSQI p= 0.045) in the exercise group ($p<0.05$). No significant improvement was observed in any measurement parameters in the control group ($p>0.05$). **Conclusions:** The results of this sudy suggest that calisthenic exercise training at home is effective in physical activity, quality of life, sleep, anxiety and depression levels in adolescents despite social isolation during the Covid-19 pandemic.

Keywords
Online Education, Calisthenic Exercise, Physical Activity, Adolescents

INTRODUCTION

In the current conditions of today's world, sedantary lifestyle has greatly increased bringing along many health problems. In this case, it is essential that individuals adopt an active lifestyle and regularly participate in self-suited exercise programmes. Many studies have shown that regular exercise has positive effects on prevention and treatment of chronic diseases (Orhan and Deniz, 2020).

The fact that individuals adopt an active lifestyle, making it a habit, is particularly relevant to the exercise habits they will have in the adolescent period. In many studies, health benefits of exercise have been investigated and it has been reported that physical activity boosts the immune system, has serious positive effects on overall

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[1]**ORCID**: 0000-0003-2071-904X, [2]**ORCID:** 0000-0003-0603-5688, [3]**ORCID:** 0000-0002-0501-5127, [4]**ORCID:** 0000-0002-4034-580X

physical capacity, stress, depression, anxiety and provides positive social effects (World Health Organization, 2020). Therefore, in order for the healthy development of adolescent individuals, the preparation and implementation of appropriate must be carried out 3 days a week (Gemalmaz and Aksoy, 2020). The growth and development of musculoskeletal system is important for exercise to improve the capacity of adolescent by physiologically developing muscles, nerves and organs (Taskın and Ozdemir, 2018). When adolescence and subsequent inadequate physical activity are not intervened, inactive physical life can have the same negative impact on the quality of life of individuals in the following years (Gemalmaz and Aksoy, 2020). In adolescent who exercise regularly, cardiovascular functions, muscle strength and metabolism have been proven to be better than adolescent who are not active during childhood during the day (Taskın and Ozdemir, 2018; Sardinha et al,2008).

In a study conducted in adolescent between the ages of 13-15, it was determined that 80,3% did not participate in medium-intensity physical activity recommended by the World Health Organization for 60 minutes per day (Aktuğ et al. 2020; Thomas et al. 2017). Despite the benefits of regular physical activity, another study conducted in 15 European countries found that participation in regular physical activities was less than 50% as recommended (Temel et al. 2010). As we can see, there is an inactive population worldwide.

In a study, it was observed that the level of physical activity has decreased with social isolation during Covid-19 pandemic (Ercan et al. 2020). During the Covid-19 restrictions, it is important to remain physically active and have an exercise routine to maintain mental and physical health. The World Health Organization periodically repeats its calls on this issue (Hyunsuk et al.2016). Today, the public health perspective focuses on the protection and development of existing health. The organization of physical activity is primarily important to improve health. Therefore, knowing how inactivity affects life is important for studies to improve physical activity behavior in the future (Ayhan and Pervane Vural, 2020).

In a recent study conducted on 446 university students, it was observed that the rate of physical activity was decreased during the online education due to the Covid -19 pandemic, however exercise programmmes are essential for the individual to continue the habit of exercising later on.

The United States Department of Health and Human Services recommends that physical activity the students who exhibited inactivity during the restrictions had a high desire to develop regular exercise activity behaviour in the future. On the other hand participitants who continued to to do physical activity tended to choose the type of exercises which could be perfomed at home during the pandemic restrictions (Ercan and Keklicek, 2020). In the light of these data, during the ongoing pandemic in our country, it is necessary to gain regular physical activity behaviour in order for children in adolescence to develop physically and mentally. Our aim in this study was to examine the effectiveness of calisthenic exercise training on physical activity, quality of life, sleep, anxiety and depression levels in adolescents.

METHODS

Sample and Study Design

Thirty-eigth adolescent students who had been studying full-time online education during the pandemic were randomized into two groups (Calisthenic exercise group n=19 and Control group n=19). First group received calisthenic exercise training for 8 weeks. Individuals participated in the study through the videoconferans. Healthy adolescent who had no contradiction for regular physical exercise were included in our study (Figure 1). Control group did not receive any exercise training. Both groups were assessed at baseline and at the end of 8 weeks. Participant in this study consisted of volunteered adolescent who were suitable for the age range and met the inclusion criteria for our research between September 2020 and July 2021.This study was approved by the Research Board and Ethics Board of Medicine and Health Sciences at University (Project no: KA20/478) and supported by the Research Fund of University. The Clinical trial number of the study is NCT04942990.

Outcome Measures

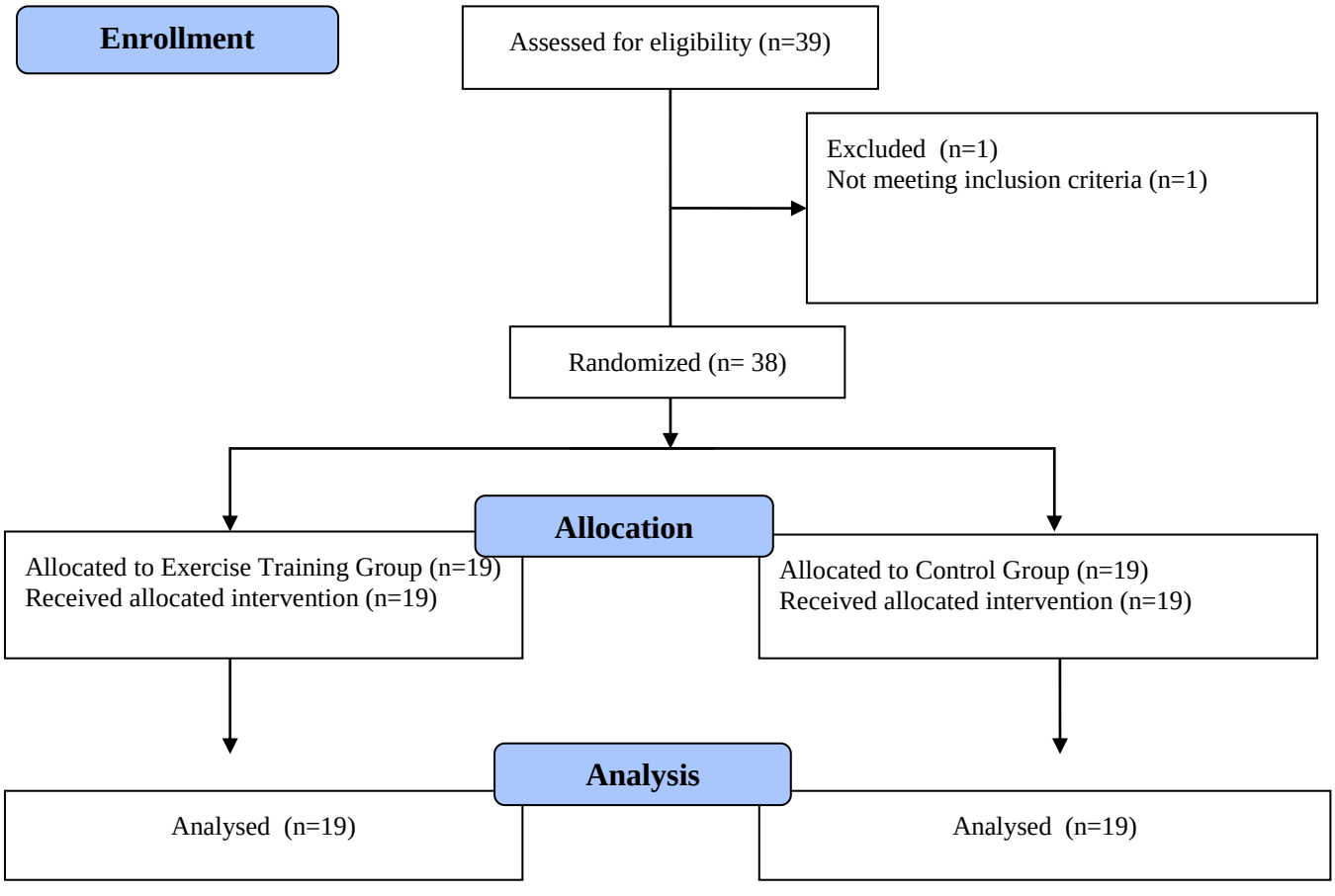
The levels of physical activity were measured by the short form of the International Physical Activity Questionnaire (IPAQ). The validity and reliability of the Turkish version of

IPAQ has been shown previously. This short form consists of 7 questions which provides information about the time spent in severe-moderate walking score indicates better physical activity level. (Sağlam et al. 2010).

The Pittsburgh Sleep Quality Index (PSQI) has been used to assess sleep quality. Sleep measures sleep time, delays in sleep, frequency and severity of sleep-related problems and the impact of poor sleep on the individual's life activity. Total score ranges from 0-21 points and and sitting activities over the past week. The total energy spent is calculated as metabolic equivalent of task (MET) spent per minute. Higher MET

disturbances were assessd initially and at the end of 8 weeks. PSQI consists of 24 questions which >5 points indicates “poor sleep quality” (Ağargün et al. 1996).

Study Flow Diagram



Pediatric Quality of life Questionniare Short Form (PedsQL-SF) has been used to measure the quality of life of the participitants developed by Varni and his friends in 1999, Memik conducted a study of the validity and reliability of the scale in 2008. The scale is scored in three areas. According to this scale, scores and total points are calculated in the areas of emotional functionality, social functionality and school functionality. The scale is scored 0,25,50,75,100 points, equal to 4, 3, 2, 1, 0 respectively. Physical health total score is calculated individually and bullet points are collected assessing emotional, social, school functionality, resulting in psychosocial health total score. Higher points indicate better quality of life (Cakın-Memik et al. 2007). Reynolds Adolescent Depression Scale developed in 1981 and the validity and reliability of the scale in Turkish was

made by Oksay. The scale consists of 6 questions, Higher score indicates higher depressed symptoms (Oskay,1997). The Beck Anxiety Scale was used to determine the level of anxiety. It consists of 21 questions in total. Each item is rated between 0-3. Higer total scores inicate higher anxiety levels. Turkish validity and reliability of the scale was studied by Ulusoy and his friends (Ulusoy et al.1998).

Exercise Training

During the first meeting, individuals were informed about the basic principles of exercise, about the importance of the calisthenic exercises and the physical and mental effects to the body. The exercise program consists of trunk, lower and upper extremity exercises (Figure 1-2). The is rated between 1-4 and total of 30-120 points. duration of the study was targeted as 8 weeks. The trainings consisted of 3 sessions per week, with an average of 45 minutes of calisthenic exercises per session. Exercises initially started with an average of 30 minutes, 10 repetitions, with a difficulty which was gradually increased once every two weeks. The duration of the exercises were gradually increased to 45 minutes. The exercises have been modified for those who have trouble following the training program. The program was completed with 5 minutes of warm-up and 5 minutes of cooling exercises before and after exercise training. All exercises were conducted on a videoconferans supervised by an experienced physiotherapist.

Figure 1

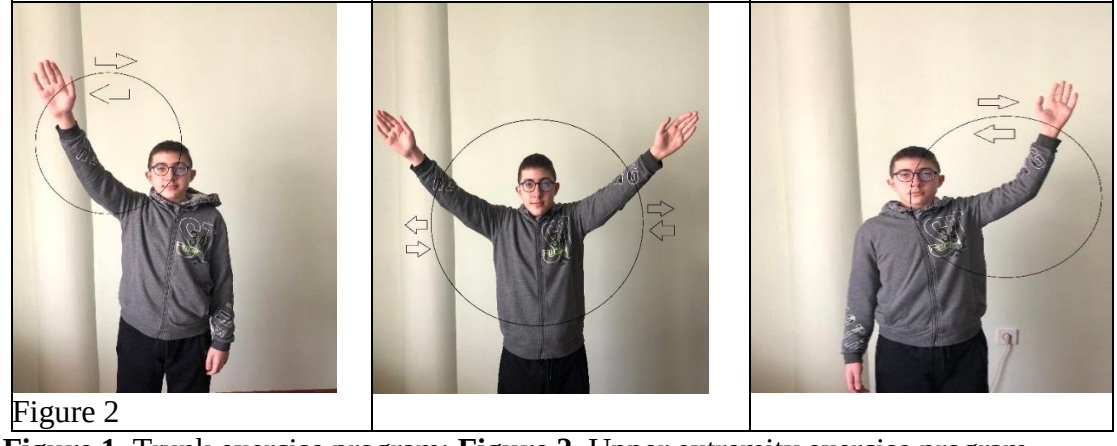


Figure 2

Figure 1. Trunk exercise program; **Figure 2.** Upper extremity exercise program

Statistical Analysis

The sample size of the study to be performed with 85% power has been determined as a total of 38 participants. The data obtained in the study was analyzed using the SPSS version 25 statistical package program. The descriptive statistics gave an average ± standard deviation or median (minimum to maximum), number (n) and percentage (%) for the categorical data, depending on the assumptions for the numeric data. The data was evaluated based on homogeneity and the appropriate parametric analysis were applied. The differences between pre and post-education data were performed by Wilcoxon testing against those that did not meet paired sample t tests for homogeneous distribution, and the comparison between groups were done by independent t test and Mann-Whitney U test.

RESULTS

Our study included a total of 38 people, 19 in the exercise training group and 19 in the control group. Students who were included in the exercise training group participated in all sessions for 8 weeks. The average age of participants was 12.95 ± 0.65 years, the BMI average was 22.25 ± 3 kg/m². The descriptive statistics of the demographic information of the participants are given in Table 1. There was no significant difference between calisthenic exercise group and control group in terms of demographic parameters.

Table 1. Comparison of demographic information by groups

Gender	Study Group n=19	Control Group n=19	p
Female/Male	8(42,1) / 11(57,9)	10(52,6) / 9(47,4)	0,516[b]
Age	12,84 ± 0,37	13.05 ± 0,84	0,329[a]
Height	1,55 ± 4,5	1,57 ± 9,95	0,560[a]
Weight	51,63 ± 9,517	53 ± 9,82	0,665[a]
BMI	21,23 ± 3,662	21,27 ± 2,271	0,968[a]

a: Student t test, mean ± standard deviation, b: Pearson Ki-square test; n(%)

When looking at the differences in IPAQ; there was a significant difference between the total, walking and medium activity sub-dimensions, excluding high level activity, before and after training in the exercise group (p=0.020; p=0.016; p=0.004 respectively), No significant difference was found between the exercise group and the control group in terms of total, walking and high activity sub-size, except for the medium-intensity sub-dimension of the IPAQ (p=0.049) (Table 2).

Table 2. Differences in the International Physical Activity Scale

	Study Group				Control Group			
	Pre-Training	Post-Training	Pα	Effect Size	Pre-Training	Post-Training	Pα	Pβ
IPAQ Walk	396(0-2079)	0(0-1920)	0,016*[b]	0,927	132(0–1400)	0(0 – 1950)	0,157[b]	0,219[d]
IPAQ Medium Activity	0(0 – 725)	396(0– 2772)	0,004*[b]	0,876	0(0 – 650)	0(0 – 1400)	0,480[b]	0,049*[d]
IPAQ High Activity	0(0 – 1920)	0(0 – 1980)	0,248[b]	0,761	0(0 – 2880)	0(0 – 2880)	0,655[b]	0,110[d]
IPAQ Total	543(63 – 3999)	749(84 -4765)	0,020*[b]	0,583	204(0 – 3900)	252(0 – 3276)	0,790[b]	0,057[d]

a: paired sample-t test; mean ± standard deviation, b: Wilcoxon test; median (min-max), d: Mann-Whitney U test; median (min- max), Pα: Comparison of pre-and post-course and control group Pβ: Comparison of two group difference values, *p<0.05

When looking at the differences in quality of life assessment parameters, all parameters in the exercise group were statistically significant (all p<0.05) while no statistically significant difference was found in the parameters in the control group (p>0.05). When looking at the differences in quality of life assessment parameters between groups, there was a significant difference in terms of total scores and physical health scores, but no difference was found in terms of psychosocial health scores (0,012; 0,001; 0,198; respectively) (Table 3).

Table 3. Differences of quality of life assessment parameters

	Study Group				Control Group			
	Pre-Training	Post-Training	Pα	Effect Size	Pre-Training	Post-Training	Pα	Pβ
PedsQL Total	1825 ± 227,3	1930 ± 251,3	0,008*[a]	0,438	1859,2 ± 217,6	1818,4 ± 242,9	0,345[a]	0,012*[c]
PedsQL Physical Health Score	675(400 – 750)	700(525 – 800)	0,003*[b]	0,572	700(225 – 800)	700(225 – 800)	0,590[b]	0,001*[d]
PedsQL Psychosocial Health Score	1196,05 ± 157,9	1251,31 ±196,7	0,080*[a]	0,080[a]	1210,5 ± 123,7	1207,9 ± 119,6	0,937[a]	0,198[c]

a: Paired sample t test; mean ± standard deviation, b: Wilcoxon test; median (min-max), c:Student t test; mean ± standard deviation d: Mann-Whitney U test; median (min-max), Pα: Comparison of pre-and post-course and control group Pβ: Comparison of two group difference values, *p<0.05

When looking at the measurement differences between baseline and 8 weeks in the Reynold Depression scale, there was a statistically significant difference in the exercise group (p=0.003), while there was no statistically significant difference in the control group (p=0.162). Considering the depression assessment, a statistically significant difference was found between the exercise group and the control group in favor of the exercise group (p=0.007). When looking at the measurement differences between baseline and 8 weeks in the Beck anxiety Questionnaire, there was a statistically significant difference in the exercise group (p=0.004), while there was no statistically significant difference in the control group (p=0.705). The anxiety assessment was found statistically significant between exercise group and control group in favor of the exercise group (p=0.007) (Table 4).

Table 4. Differences of anxiety and depression level parameters

	Study Group				Control Group			
	Pre-Training	Post-Training	Pα	Effect Size	Pre-Training	Post-Training	Pα	Pβ
Reynolds Adolescent Depression Scale	53,63 ± 9,32	50,26 ± 9,18	0,003*[a]	0,364	50,79±12,28	53,63 ± 12,29	0,162[a]	0,007*[c]
Beck Anxiety Scale Score	1(0 – 3)	1(1 – 4)	0,004*[b]	0,840	1(0 – 2)	2(1 – 4)	0,705[a]	0,007*[d]

a: Paired sample t test; mean ± standard deviation, b: Wilcoxon test; median (min-max), c: Student t test; mean ± standard deviation d: Mann-Whitney U test; median (min-max), Pα: Comparison of pre-and post-course and control group Pβ: Comparison of two group difference values, *p<0.05

Based on the intra-group differences of the sleep quality levels evaluated by PSQI, the average sleep efficiency (p=0.020), sleep disturbance (p=0.014) and total scores (p=0.002) were found to be significantly different before and after the calisthenic training in the excercise group. Whereas in the control group, no significant difference was found in all sub-parameters (p>0.05). Also there was a significant difference only in the total scores (p=0.045) and sleep times (p=0.048), between the exercise group and the control group (Table 5).

Table 5. Differences of sleep quality level

	Study Group				Control Group			
	Pre-Training	Post-Training	Pα	Effect Size	Pre-Training	Post-Training	Pα	Pβ
PSQI Subjective Sleep Quality	1(0-2)	1(0-1)	0,414[b]	0,074	1(0 – 2)	1(0 – 2)	0,083[b]	0,798[d]
PSQI Sleep Latence	1(0-2)	1(0-2)	1,00[b]	0	1(0 – 2)	1(0 – 2)	0,527[b]	0,611[d]
PSQI Sleep time	0(0-1)	0(0-1)	0,157[b]	0,302	0(0 – 1)	0(0 – 1)	0,157[b]	0,048*[d]
PSQI Typical sleep efficiency	0(0 – 3)	0(0 – 3)	0,020*[b]	0.706	0(0 – 3)	0(0 – 3)	0,746[b]	0,200[d]
PSQI Sleep disorder	1(0 – 2)	1(0 – 1)	0,014*[b]	0.703	1(0 – 2)	1(0 – 2)	1,00[b]	0,086[d]
PSQI Sleeping drug use	0(0 – 2)	0(0 – 0)	0,317[b]	-	0(0 – 0)	0(0 – 0)	1,00[b]	0,317[d]
PSQI Daytime dysfunction	0(0 – 2)	0(0 – 2)	1,00[b]	0	0(0 – 2)	0(0 – 2)	1,00[b]	0,739[d]
PSQI Total	4,31 ± 2,65	2,84± 1,5	0,002*[a]	0.684	4,42±2,32	4,16±2,41	0,543[a]	0,045*[c]

a: Paired sample t test; mean ± standard deviation, b: Wilcoxon test; median (min-max), c: Student t test; mean ± standard deviation
d: Mann-Whitney U test; median (min-max), Pα: Comparison of pre-and post-course and control group Pβ: Comparison of two group difference values, *p<0.05

DISCUSSION

In this study the effects of 8-week online calisthenic exercise training on physical activity, sleep, quality of life, anxiety and depression was assessed during the Covid-19 pandemic. It was observed that calisthenic training had positive effects on sleep quality, quality of life, depression, anxiety, physical activity level and physical activity parameters.

Global spread of the Covid-19 pandemic, strict quarantine measures shut people in their homes, and with this closure, people's physical activity levels decreased significantly. When the physical activity levels and quality of life and depression changes of 168 university students during the pandemic were examined, it was found that this situation affected the quality of life, a sedentary lifestyle was adopted and the susceptibility to depression increased (Cihan and Sahbaz Pirincci, 2020). These negative effects on health, especially the decrease in the levels of physical activity may cause serious concerns (Kartal et al. 2020). However, due to the developed immune system in those who do regular physical activity, it both prevents the disease and makes it easier to overcome the disease after being caught (Korkmaz et al. 2020). Therefore it is necessary to determine the physical activity status of individuals in the risk group and to give an appropriate physical activity program (Cihan and Sahbaz Pirincci, 2020; Bulguroglu et al.2021). In the study conducted on 269 students, it was determined that 61.3% of the students did not follow the physical education lessons during the online education, and 65.8% of the students were found to move less during the Covid-19 pandemic. It is recommended to do aerobic and strength exercises at least 4-5 days a week in order to increase sedentary life, reduce psychological distress and maintain physical fitness in the pandemic (Korkmaz et al. 2020, Celik and Yenal, 2020). Also it is emphasized that severe physical activities should be avoided in terms of the immune system, and that moderate physical activities should be increased to support immunity (Aktuğ et al. 2020). The online calisthenic exercise program that we gave to adolescents during online education process in this study concluded in an increased level of physical activity in the exercise group. This increase seems to be an increase in moderate physical activity and walking. Calisthenic exercise training is a moderate level exercise training, in terms of cardiopulmonary systems parameters. Higher intensity training programmes other than calisthenic exercise training may have positive effects on higher physical activity levels but these exercise programmes should be given after a comprehensive cardiopulmonary evaluation.

Similar to our study; in a study which examined the effect of exercise training applied to university students during the pandemic, no significant change was found in the vigorous physical activity scores, but there was a significant change in the walking scores. Similar to our study,

it was observed that the change in moderate physical activity scores was positively affected (Küçük, 2021). In our current situation, we think that health services and the government should carry out studies that will encourage physical activity for students, exercise programs that can be applied at home should be given and encouraged for all individuals, and studies should be carried out to improve their physical activity levels after the pandemic (Aktuğ et al. 2020; Celik and Yenal, 2020). Changes in the physical activity levels affect quality of life. In a study conducted during the social isolation of the Covid-19 pandemic, it was found that decrease in physical activity negatively affected the psychological state due to its negative impact on the quality of life (Kaya Ciddi and Yazgan, 2020). In another study conducted on 4805 female adolescents aged 11-18 years, it was reported that 39.5% of the participants got high scores on the depression scale. It has been reported that the increase in depression, especially distance education, illness-related anxieties, daily sleep duration less than 6 hours, and daily physical activity less than 30 minutes are closely related to depression symptoms (Zhou et al. 2020). Studies in the literature prove that physical activity affects quality of life. In a study conducted with university students, it was stated that the level of physical activity positively affects the quality of life (Cihan and Sahbaz Pirincci, 2020). In another study conducted in 567 people during the pandemic, it was found that individuals who exercised had a higher quality of life than those who did not. It has been found that increased physical activity has a positive effect on general health (Boutelle et al. 2000). Strine et al. reported that as the severity of depression increases, the quality of life decreases (Cihan and Sahbaz Pirincci, 2020; Strine et al. 2009). In this process, many studies suggest that young people should be informed about exercises they can do at home (Bulguroğlu et al. 2021). In our study the training group showed significant positive change in the physical health. scores and the total scores psychosocial health Psychosocial health score showed a significant change, but when we applied the Beck Anxiety and Reynold Adolescent Depression Scales, psychosocial status was affecte positively. Similar to the literature we found that exercise training increased quality of life. Increasing the quality of life at a later age have a positive impact on the general health status and prevents from life-threatening diseases (Kartal et al. 2020; Isıklar, 2021).

Another factor affecting quality of life is reducing psychological stress. In the conditions we live in, our quality of life is affected by catching diseases, deaths, and changes in our lives, and this situation has a negative impact on our health (Kaya Ciddi and Yazgan, 2020). Many factors such as continuing education remotely during the pandemic process and not knowing when the process will end, increasing quarantine rules, feeling of loneliness, increasing time spent at home, eating disorders, increasing economic difficulties, deteriorating sleep habits, especially depression and anxiety disorders in the adolescent age group, including mental problems. In a survey conducted on 2530 university students to examine the psychological effects of Covid-19 in Spain, it was determined that individuals' anxiety, depression and stress levels increased (Odriozola-Gonzalez et al. 2020). Also in a questionnaire study, in which 1210 individuals participated in order to measure the psychological state in the pandemic, it was determined that 16.5% had moderate depression, 28.8% had moderate anxiety symptoms and 8.1% had moderate-severe stress symptoms. It was concluded that 84.7% of the participants spent 20-24 hours at home at home (75.2%) and were worried about their family members catching the disease (Wang et al. 2020). The stress, anxiety in 20.8%, depression symptoms in 17.3% and sleep problems in 7.3% 33. In order to see the psychological effects of physical activity, individuals who did not exercise during the pandemic period were compared with those who did regular exercise. The anger, tension and sadness levels of the individuals who did not exercise were found to be significantly higher than those who did. It has been determined that the quality of life and mood are positively affected by physical activity, the quality of life will increase with exercise, and the mood is positively affected by exercise (Berk, 2021).

As a result of exercise training in our study we found that the Reynolds Adolescent Depression Scale and Beck Anxiety Scale scores in the training group showed a significant improvement.

Sleep is the body's physical and mental rest that provides time for renewal as a biological process. Sleep quality and sleep division are important factors for waking up refreshed in the morning and being refreshed during the day. The

deterioration of sleep quality, decrease in tquality of life may negatively affect physical and mental health and may lead to serious health problems. Being in the house as a result of quarantine measures in the remaining subjects, sleep efficiency, sleep duration and sleep duration are known to be negatively affected. In a study conducted among university students it was reported that the quality of sleep reduced due to disturbed sleep patterns and waking up early in the morningand waking up tired were the most important indicators (Ilhan et al. 2020).

In accordance with the literature our findigs support that 8 week exercise have resulted in a decrease in total PSQI scores which represents an increase in the quality of sleep. The sleep duration was increased and sleep efficiency was reduced by the time spend in bed sleeping. This situtaion impacted from process of waking up in the middle of the night such as going to the bathroom, getting up, snoring, difficulty in breathing, pain problems. It has been found that there could be significant differences in sleep latency, subjective sleep quality, and daytime dysfunction, during medication for sleep disturbances. In our study there was only one participant who was using sleeping pills, therefore no significant difference has been found. The physiotherapy and rehabilitation services and health workers are working in many fields in order to overcome the pandemic with minimum damage in our country just like the whole world. It is important to evaluate physical activity levels, sleep quality, quality of life, psychosocial status, and physical activity levels of adolescents for their healthy development. We think that as a result of these studies the negative effects of the pandemic will reduce to a minimum by supporting adolescent and adolescents physically and mentally.

Conclusions

As a result, it was observed that calisthenic training applied in healthy adolescents increased sleep quality, quality of life, depression, anxiety, physical activity levels and physical activity parameters. We suggest that online calisthenic exercise training is useful and that it may be given to adolescents during and after the pandemic.

Funding Source/Trial Registration

Funding Source/Trial Registration

Funding: None This study is registered at www.clinicaltrials.gov (NCT04942990).

Conflict of interests

The authors have no conflict of interests to declare. No financial support was received for this study.

Ethics Statement

Ethical approval was obtained from the ethics committee of Başkent University, Medicine and Health Sciences Research Boardfor the study to be performed (Number: 07.04.2021/21-59).

Author Contributions

Study design; KA (%30), NÖP (%70). Data collection; KA(%40), NÖP(20), OÜY(%20), HCT (%20). Statistical analysis; KA(%10), NÖP(%40), OÜY(%50). Data interpretation; KA(%30), NÖP(%40), OÜY(%30). Manuscript preparation; KA (%10), NÖP(%30, OÜY(%30), HCT (%30). Literature search; KA (%10), NÖP(%30), OÜY(%30), HCT(%30). All authors have read and agreed to the published version of the manuscript.

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