The effects of exercise training DVDs on the self-esteem of primary school students with obesity

Los efectos de los DVD de entrenamiento físico en la autoestima de los estudiantes de primaria con obesidad

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Abstract

Background: Exercise and physical activity may also experience favourable psychological effects. This study aimed to find out the effects of physical fitness training videos on the self-esteem of children with obesity.
Methods: This randomized controlled experiment involved 864 children with obesity aged between 7 and 12. The intervention group was given instructional films that served as the basis for 12-week exercise training program. In both pre-test and post-test stages, parents were asked to fill out the self-esteem measure sheets. Pairwise t-tests and analysis of covariance (ANCOVA) were used to examine the data.
Results: After the intervention, the control and intervention groups' mean self-esteem levels differed significantly ($F=3157.211$, $p<0.001$). Following a 12-week intervention, the experiment group's body mass index ($F=202.47$) and body weight ($F=741.25$) decreased ($p<0.001$).
Conclusion: Obese children experienced mass index weight loss, and their self-esteem improved after participating in exercise program using instructional videos. It is hoped that families, schools, therapeutic and educational facilities may benefit from the fitness regimen that we developed through this research.

Keywords

Physical exercise; obesity; children; self-esteem; educational video.

Resumen

Antecedentes: El ejercicio y la actividad física también pueden tener efectos psicológicos favorables. Este estudio tuvo como objetivo determinar los efectos de los videos de entrenamiento físico en la autoestima de niños con obesidad.
Métodos: Este experimento controlado aleatorio involucró a 864 niños con obesidad de entre 7 y 12 años. El grupo de intervención recibió videos instructivos que sirvieron de base para un programa de entrenamiento físico de 12 semanas. Tanto en la fase pretest como en la postest, se solicitó a los padres que completaran las hojas de medición de autoestima. Se utilizaron pruebas t de pares y análisis de covarianza (ANCOVA) para examinar los datos.
Resultados: Después de la intervención, los niveles medios de autoestima de los grupos control e intervención difirieron significativamente ($F = 3157,211$, $p < 0,001$). Tras una intervención de 12 semanas, el índice de masa corporal ($F = 202,47$) y el peso corporal ($F = 741,25$) del grupo experimental disminuyeron ($p < 0,001$). Conclusión: Los niños con obesidad experimentaron pérdida de peso según su índice de masa corporal y mejoraron su autoestima tras participar en un programa de ejercicios con videos instructivos. Se espera que las familias, las escuelas y los centros terapéuticos y educativos se beneficien del programa de ejercicios desarrollado mediante esta investigación.

Palabras clave

Ejercicio físico, obesidad, niños, autoestima, vídeo educativo.

Introduction

Globally, the prevalence of overweight and obesity is rising alarmingly, particularly among children and teenagers (Jebeile et al., 2022; Ng et al., 2014; Qiao et al., 2017). Recent years have seen a significant increase in the number of children with obesity, with different trends observed in different places and eras. Statistics show that the prevalence of children and teenagers with obesity has risen from 0.7 to 5.6% during the last 50 years (Jebeile et al., 2022). The prevalence of childhood with overweight and obesity is expected to rise by 30% worldwide by 2030, with middle- and high-income nations having even higher rates at 58.3% (Gao et al., 2023).

Childhood with overweight and obesity pose major global public health issues, with prevalence rates that vary by area and ethnicity. Approximately 26% of Asian American youngsters are fat or overweight (Jenabi & Khazaei, 2020; Ng et al., 2014; Yusuf et al., 2019), 17.9% of preschool-aged children in Europe are overweight or obese, according to reports (Gao et al., 2023; Garrido-Migue et al., 2019), 31 percent of children in the US are overweight or obese (Gurnani et al., 2015). The rate of children with obesity is rising in Indonesia. The prevalence of children with obesity under ten is estimated to be 9.8% for girls and 13.1% for boys (Rohmansyah & Hiruntrakul, 2021).

The prevalence of children with obesity is rising worldwide and varies greatly by socioeconomic class, ethnicity, and lifestyle choices. Socioeconomic, behavioural, environmental, and genetic factors can have an impact on this complicated problem (Muris & Otgaar, 2023). Obesity may directly reflect genetic propensity. Children with obesity and overweight are more likely to have parents with obesity (Fernández-Bustos et al., 2019). A sedentary lifestyle and poor nutrition (fast food and high-calorie foods) are two of the biggest risk factors for childhood with obesity (Buchan et al., 2012). Childhood with obesity is also linked to socioeconomic factors, such as parents' lifestyle and parenting style (Lucibello et al., 2020), parents' educational attainment, low family income, and restricted access to nutritious food and sports equipment (Shaban Mohamed et al., 2022).

Previous studies have found that girls are more likely than boys to suffer from disorders associated with overweight or obesity (Muscogiuri et al., 2024). In addition, girls face greater psychological difficulties than boys in relation to body image and obesity (Muscogiuri et al., 2024). Emotional stress and psychological anguish are closely associated with overweight or obesity, which is characterized by an extremely high body fat percentage (Jebeile et al., 2022). Obesity and overweight can result from high levels of stress as well as long-term psychological and personality problems (Shaban Mohamed et al., 2022). Self-esteem is one of the psychological factors that obesity might adversely impact (Junior et al., 2015; Strauss, 2000). Among numerous aspects of self-evaluation is self-esteem. This idea conveys how an individual views their abilities, physical attributes, and social skills (Muris & Otgaar, 2023).

Children's psychological well-being and self-esteem can be enhanced by physical activity. According to the affective-reflective theory, exercise training can enhance a person's psychological well-being as physical activities influence emotional values (Brand & Cheval, 2019). In situations when people either begin an activity (exercise) or remain in a state of physical inactivity, affective-reflective theory can potentially explain and predict behaviour. According to this dual-process paradigm, exercise-related stimuli are believed to produce automatic associations and affective value of exercise (type-1 process). The reflective appraisal (type-2) process can go forward from the automatic affective valuation if self-control resources are available (Brand & Cheval, 2019). The exercise and self-esteem model states that physical activity increases self-efficacy and self-esteem, which in turn improve perceptions of physical acceptance and exercise competence. Higher general self-esteem is a result of these improvements (Fernández-Bustos et al., 2019). It builds a model for studying the relationship between exercise and self-esteem in which self-structure components are arranged hierarchically based on generality. Measures of physical work expenditure, physical self-efficacy, physical competence, physical acceptance, global self-esteem, and perceived relevance of self-concept components are used to operationalize the self-esteem model, which includes aspects of competence and self-acceptance. According to self-efficacy theory, self-efficacy influences goal-setting, perseverance, and the capacity to overcome challenges, all of which have an impact on behavioural engagement. People can improve their self-esteem by increasing their physically activity and boosting their self-efficacy (Buchan et al., 2012).

Numerous emotional, cognitive, and behavioural components are involved in the complex psychological processes linked to obesity and low self-esteem. Body-related shame and guilt (Lucibello et al., 2020),

internalized weight stigma (Ratcliffe & Ellison, 2015), emotional discomfort and coping strategies (Degirmenci et al., 2015), disordered eating patterns (Iannaccone et al., 2016), socioeconomic circumstances (Hemmingsson, 2014), perceptions of self-efficacy and disease (Bonsaksen et al., 2015), and negative body image (Radoszewska, 2017) are a few examples of these mechanisms.

Empirical research suggests that obesity is linked to low self-esteem (Strauss, 2000), and that persons with obesity have a negative body image, which lowers their self-esteem (Grünberg et al., 2023; Junior et al., 2015). Frequent physical activity and exercise can help youngsters lose weight (Kelley et al., 2014), improve their psychological well-being, and experience fewer unpleasant emotions (Li et al., 2023).

Evidence suggests that children and adolescents who engage in physical activities have higher levels of self-esteem (Kelley et al., 2014; Li et al., 2023). Obese children's self-esteem is greatly increased by educational initiatives that are geared to change their lifestyles through physical activities (fathy et al., 2022).

Due to their hectic work schedules, many families today do not have enough time to send their children to sports clubs. Children's access to sports clubs may also be restricted by the expense of joining, the club's distance from their home, and a host of other issues. Consequently, one useful way to get over these restrictions is to use exercise training DVDs. Research has demonstrated the efficacy of at-home workout regimens that are presented through instructional videos in enhancing mental health. According to a study, there is a good chance that home fitness programs that are accessible through internet or video platforms would help children and teenagers feel less anxious (Ghatrehsamani et al., 2010; Luna et al., 2019). According to a different study, children who are with overweight and engage in physical activity with educational CDs have a significant impact on their body mass index (BMI) and weight loss (Ghatrehsamani et al., 2010). Furthermore, results from a different study demonstrated that active video game-based fitness regimens boost children's self-esteem and lower their BMI (Duman et al., 2016). Weight loss can be effectively aided by systematic exercise regimens (Petrofsky et al., 2011). This study sought to examine the effects of exercise training via educational films, on the self-esteem of children with obesity aged 7 to 12 since further research is needed to fully understand how exercise training affects psychological aspects in children with obesity.

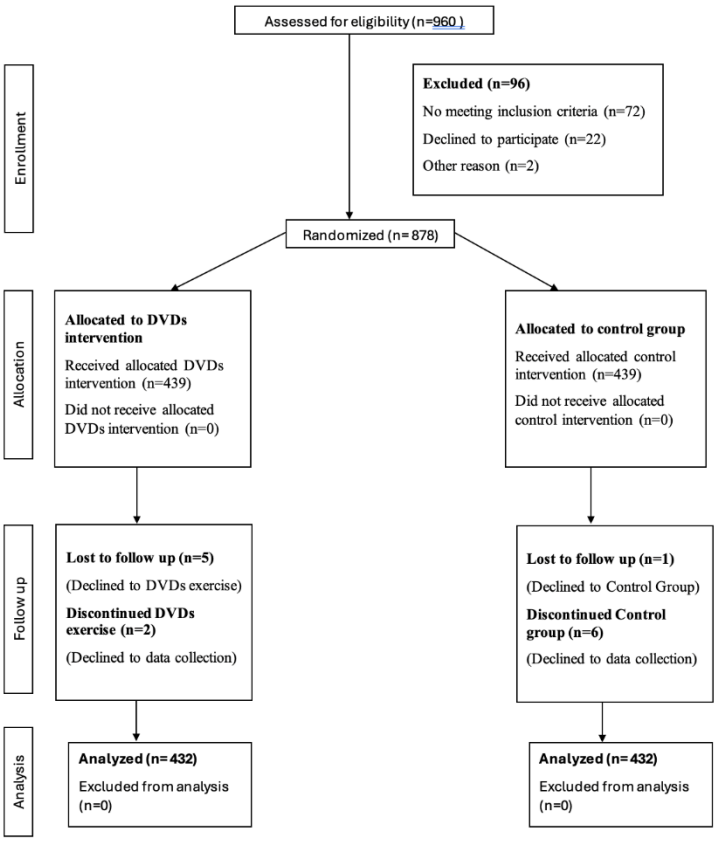
Method

Participants

The study was carried out as a Randomized Controlled Trial between October 2024 and January 2025. This research has been recorded on the clinical trial database of Universitas Negeri Yogyakarta under the code T/65.1/UN34.9.6/PT.01.04/2024. This study reported randomized controlled trials in accordance with CONSORT standards (Fig.1). Children with obesity in Yogyakarta's elementary schools, ages 7 to 12, were the focus of this study. Using basic random sampling, the participants were divided into two groups with a 1:1 allocation ratio: the control group and the DVDs group. The next participant with similar characteristics was automatically assigned to the other group after the first participant was assigned to the DVDs group. Until the categories and blocks in both groups were equal, sampling was kept constant. A total of 864 students were carefully chosen using PASS Sample Size Software, and they were randomly split into two groups: 432 participants in the control group and 432 participants in the intervention group. An alpha level of 0.05 and a statistical power of 80% were used to determine the sample size.

Participants had to be 7–12 years old, have a BMI of 25–30 (OMRON HBF 375 Karada Scan), not undergoing a special diet, not taking nutritional supplements, both parents are present (not divorced or single parents), parents are not alcoholic, be willing to exercise, not having any obesity-related diseases such as Cushing's syndrome or diabetes, having no intellectual disabilities, no neuromuscular disorders or cerebral palsy, and not taking any obesity-causing medications. The exclusion criteria were academic failure, pain during exercise, unwillingness to participate, and inability to exercise.

Figure. 1 Consort flowchart



Data collection tool

A self-esteem questionnaire and a personal information form were part of the data collecting instruments. Data on the children's and parents' ages as well as, their educational backgrounds were collected from the personal information forms.

Coopersmith self-esteem inventory (CSEI)

A popular instrument for evaluating children's and adolescents' self-esteem is the Coopersmith Self-Esteem Inventory (CSEI). This scale consists of 58 items and four subscales: academic self at school, social self with peers, home with parents, and general self. Every item has a score between 0 and 1. There are eight items on the lie detection scale. Scores on the scale range from zero to fifty. Each question is answered by respondents using a "like me" or "unlike me" scale. Prior research has validated the scale's reliability and validity markers [33,34]. The validity and reliability of this scale's Indonesian translation were verified among Indonesian elementary school pupils [35]. The Cronbach's alpha coefficient was used in the current study to determine the questionnaire's internal consistency coefficient, which came out to be 0.798.

Procedure

Data collection started after approval and an ethical code were obtained. The study's goals were first communicated to the youngsters and their parents during a meeting. All of the parents were assigned into two groups (control and intervention) that were set up on WhatsApp group chat in order to maintain communication with them. In this way, we were able to conduct face-to-face meetings, albeit virtual, with families who might have restricted access. Parents filled out a questionnaire on their demographics and self-esteem during the in-person session. Anthropometric measures, including height (m), weight, and BMI, were taken prior to the intervention group's exercise regimen being implemented.

A Consumer Push Stadiometer was used to measure height, a beam balance was used to measure weight, and the weight/height (2) formula was used to determine body mass index (BMI). Twenty-four hours following the last workout, the above characteristics were measured once again. The parents of both

groups received an electronic link to the questionnaire once the intervention process was over, and they were asked to carefully answer the questions.

Exercise training protocol

Under the guidance of a sports science specialist, instructional videos were created following the development of a workout regimen under their technical supervision. Parents of children in the intervention group were able to access the exercise video on the DVDs. The 12-week exercise program consists of three sessions per week, each lasting 45 minutes and incorporating 13 different types of exercises.

Ethical considerations

Universitas Negeri Yogyakarta's ethics committee issued an approval / ethical clearance letter numbered T/65.1/UN34.9.6/PT.01.04/2024 for this research. The Declaration of Helsinki's fundamental ethical guidelines for human experimentation were followed in this investigation. Information about the volunteers will be kept private and used only for study. The parents were informed of the study's goals, and their formal agreement was acquired.

Data analysis

The study's data were analysed at two levels using SPSS version 28 software: inferential statistics and descriptive statistics (frequency, percentage, mean, and standard deviation). The Shapiro-Wilk normality test revealed that the pre-test (Statistic = 0.978, P > 0.05) and post-test (Statistic = 0.976, P > 0.05) scores displayed normal data distributions. The two groups' demographics were compared using independent t-tests and chi-square. A paired t-test was used to assess the mean levels of self-esteem in the control and intervention groups before and after the intervention (pre-test and post-test). Additionally, analysis of covariance (ANCOVA) was used to compare the mean levels of self-esteem among the groups.

Results

Table 1 shows parents' and children's demographic information, including age, height, weight, parent's age, and level of education. The results of the t-test and chi-square test indicated that the demographics of the two groups were comparable.

Table 2 shows the statistical analysis of the general self-variable and its components for both the control and intervention groups. The paired t-test showed no significant change in the mean self-esteem scores of children in the intervention group at the pre-test (8.62 ± 3.91) and post-test (15.11 ± 3.19) stages (t=7.36, P=0.001). Additionally, there was no discernible difference between the pre-test and post-test mean scores on general self-measures among the children in the control group. The mean scores of all dimensions of general self were considerably higher for the children in the intervention group on the post-test than on the pre-test.

Statistical analysis of the social self-variable and its components for both the control and intervention groups. The paired t-test showed no significant change in the mean social self-scores of children in the intervention group at the pre-test (4.92 ± 0.831) and post-test (7.81 ± 0.815) stages (t=4.69, P=0.001). Additionally, there was no discernible difference between the pre-test and post-test mean scores on social self-measures among the children in the control group. The mean scores of all dimensions of self-esteem were considerably higher for the children in the intervention group on the post-test than on the pre-test.

Statistical analysis of the home variable and its components for both the control and intervention groups. The paired t-test showed no significant change in the mean home scores of children in the intervention group at the pre-test (3.33 ± 0.547) and post-test (8.42 ± 0.572) stages (t=5.13, P=0.001). Additionally, there was no discernible difference between the pre-test and post-test mean scores on home measures among the children in the control group. The mean scores of all dimensions of home were considerably higher for the children in the intervention group on the post-test than on the pre-test.

Statistical analysis of the school variable and its components for both the control and intervention groups. The paired t-test showed no significant change in the mean school scores of children in the intervention group at the pre-test (4.27 ± 0.781) and post-test (8.45 ± 0.792) stages (t=4.33, P=0.001).

Additionally, there was no discernible difference between the pre-test and post-test mean scores on school measures among the children in the control group. The mean scores of all dimensions of school were considerably higher for the children in the intervention group on the post-test than on the pre-test.

Statistical analysis of the self-esteem variable and its components for both the control and intervention groups. The paired t-test showed no significant change in the mean self-esteem scores of children in the control group at the pre-test (11.24 ± 3.30) and post-test (13.35 ± 3.41) stages (t=1.36, P=0.611). Additionally, there was no discernible difference between the pre-test and post-test mean scores on self-esteem measures among the children in the control group. The children in the intervention group had a significantly higher average self-esteem score in the post-test phase (31.11 ± 3.12) compared to the pre-test phase (13.35 ± 3.41) (t = 18.61, P < 0.01). The mean scores of all dimensions of self-esteem were considerably higher for the children in the intervention group on the post-test than on the pre-test.

Analysis of covariance (ANCOVA) was used to compare the self-esteem scores of the control and intervention groups. The mean self-esteem levels of the experimental and control groups differed significantly in the post-test phase (F=3157.211, P<0.001).

Children in the control and intervention groups differed significantly in all areas of self-esteem, including academic self (F = 733.32, P < 0.01), home (F = 757.88, P < 0.01), social self (346.40, P < 0.01), and general self (F = 387.84, P < 0.01). After the intervention, the children in the intervention group scored higher than the children in the control group, as is shown on Table 3.

The experimental and control groups' weights and BMIs differed significantly After exercise, the intervention group's weight (F = 741.25, P < 0.001) and BMI (F = 202.47, P < 0.001) were reduced.

Table 1. Compares the parents' and children's demographics

Variable	Mean ± SD		t-test	p-value
	Control	Intervention		
Child Age	10.15 ± 1.72	10.13 ± 1.71	1.25	0.109
Height	125.13 ± 3.44	125.14 ± 3.34	0.511	0.738
Weight	33.23 ± 1.41	33.13 ± 1.22	0.852	0.592
Father age	37.12 ± 2.31	37.11 ± 2.32	0.042	0.859
Mother age	37.03 ± 2.17	37.09 ± 2.13	0.151	0.521
Variable				
Father education				
Elementary	53	44	9.152	0.051
Secondary	93	71		
Senior	102	113		
University	184	204		
Mother education				
Elementary	44	54	4.638	0.577
Secondary	48	55		
Senior	146	151		
University	194	172		

Table 2. The outcomes of the analysis of covariance (ANCOVA) and paired t-test used to compare the control and intervention groups.

Variable	Group	Pre-test	Post-test	Paired t-test	p	ANCOVA test	P	Partial eta squared
		Mean ± SD		t		F		
General self	Control	8.86 ± 3.78	10.38 ± 3.39	0.471	0.771	496.65	0.001	0.895
	Intervention	8.62 ± 3.91	15.11 ± 3.19	7.36	0.001			
Social self (peers)	Control	4.42 ± 0.872	4.81 ± 0.889	0.461	0.988	486.81	0.001	0.891
	Intervention	4.92 ± 0.831	7.81 ± 0.815	4.69	0.001			
Home (parents)	Control	3.85 ± 0.613	3.99 ± 0.621	0.511	0.562	671.91	0.001	0.776
	Intervention	3.33 ± 0.547	8.42 ± 0.572	5.13	0.001			
School (academic)	Control	4.13 ± 0.677	5.29 ± 1.22	0.366	0.331	881.14	0.001	0.913
	Intervention	4.27 ± 0.781	8.45 ± 0.792	4.33	0.001			
Self-e steem	Control	11.24 ± 3.30	13.35 ± 3.41	1.36	0.611	3157.211	0.001	0.738
	Intervention	11.44 ± 3.02	31.11 ± 3.12	18.61	0.001			

Table 3. Analysis of variance test (ANCOVA) results comparing the two groups' weight and BMI before and after the intervention

Variable	Group	Pre-test Mean ± SD	Post-test	Paired t-test t	p	ANCOVA test F	P	Partial eta squared
Body weight (kg)	Control	35.18 ± 1.46	35.09 ± 1.45	1.737	0.075	741.25	0.001	0.773
	Intervention	34.11 ± 2.22	31.21 ± 2.15	18.273	0.001			
Body mass index (BMI)	Control	27.19 ± 2.21	27.11 ± 2.20	1.173	0.087	202.47	0.001	0.691
	Intervention	27.18 ± 2.17	25.09 ± 2.11	22.813	0.001			

Discussion

This study aimed to find out how exercise training affected the self-esteem of children with obesity aged 7 to 12. Two groups were created for this study: the control group and the intervention group. The intervention group participated in an educational DVD-based twelve-session fitness program.

The findings show that obese children's self-esteem levels were positively improved by n 12-week exercise program that was taught through instructional videos. In line with results from earlier research, post-intervention self-esteem measures showed a notable improvement. Systematic review's findings (Duman et al., 2016) show that participants who did physical exercises at home using instructional videos showed considerably lowers anxiety levels and improved mental health. Furthermore, a different study discovered that youngsters who used cyber-cycle have better self-regulation (Janssen & LeBlanc, 2010). According to empirical data, physical activity which is based on at-home workout regimens, enhances physical self-perception, which is frequently linked to higher levels of self-esteem in children and teenagers (Lubans et al., 2016). Other advantages of exercise at home include lowered negative emotions like tension, anxiety, and despair and enhanced children's mood (Li et al., 2023). Fitness training using instructional videos and online resources successfully lowers anxiety in children and teenagers (Lubans et al., 2016). Additionally, Khazaei et al. (Khazaei et al., 2024) show that obese patients' body composition and quality of life can be improved with 8 weeks of fitness instruction based on distance learning. Additionally, evidence from a study by Fukui et a(Fukui et al., 2021) indicates that educational video-based interventions can enhance students' emotional and physical well-being.

Individuals who engage in regular exercises and physical activities report better mental health. Through the release of endorphins into the brain, exercise can enhance mental health and happiness. Exercise significantly enhances two important aspects of self-esteem: a sense of competence and accomplishment. In a cohort study, Nordstar et al. (Ningning & Wenguang, 2023) found a strong, positive relationship between children's self-esteem and physical activity as well as between their self-esteem and perceived athletic ability. Additionally, another study found that physical exercise is significantly associated with body image, perceived physical fitness, and self-esteem, all of which are critical for boosting an individual's self-esteem (Zamani Sani et al., 2016). Exercise regimens usually increase self-esteem by boosting confidence in one's physical capabilities. Research suggests that structured interventions, like multimodal training programs, might boost self-esteem by helping people learn physical skills and stick to a regular exercise schedule (Menrath et al., 2017; Wong et al., 2009).

Exercise training with instructional films can generally enhance emotional, cognitive, and physiological processes. From a physiological standpoint, exercise training affects the release of neurotrophic factors (like brain-derived neurotrophic factor) and neurotransmitters (such as dopamine and serotonin), which are critical for mood control and neuroplasticity (Ren & Xiao, 2023). Exercise has been demonstrated to improve cognitive abilities like memory, attention, and executive control in a variety of age groups, including children (Mandolesi et al., 2018). Exercise can also have a favourable impact on mood and emotional states and enhance mental health in terms of emotional processes (Basso & Suzuki, 2017).

Following twelve weeks of fitness training, the intervention group children's weight and BMI significantly decreased. The results of this study are further supported by a review of another study (Pippi et al., 2022). Children's mental and physical health can be considerably improved by developing and putting into practice strategies that increase their motivation for exercise and encourage healthy eating (Kramer et al., 2018). By fostering a favourable body image, exercise can motivate children to participate

in regular physical activity. Exercise therefore aids in weight and BMI management and fosters favourable psychological views in individuals (Kantanista et al., 2015).

Although it affects both sexes, girls are more likely to be concerned about their fitness. Girls who are unhappy with their bodies frequently have low self-esteem (Asgari et al., 2016; Junior et al., 2015). According to one study, Asian children's self-esteem and BMI significantly correlated negatively (Chen, 2016). According to an Australian study, children who were overweight or obese scored lower on measures of self-esteem than their classmates who were not overweight (Hesketh et al., 2004). Childhood with obesity may contribute to low self-esteem in later life, according to data from a longitudinal study of Canadian children (Wang et al., 2009).

Children who engage in regular exercise and physical activity can become physically fit and have better physical and mental health. Children's lifestyles should incorporate regular exercise earlier age. Video-based fitness programs are a great way to combat childhood with obesity and inactivity while also promoting a fitness culture at home. As a result, families ought to recognize the value of consistent exercise for their children and motivate them to work out at home. In conclusion, instructional films can improve motivation, self-efficacy, and exercise enjoyment, which can have a favourable impact on weight reduction and psychological well-being whether they are accessed through structured programs or online platforms.

There were certain restrictions on this investigation. This study only focused on children with obesity between the ages of 7 and 12. This, consequently, would restrict the applicability of our video-based physical fitness program on the other age groups. This, future research should examine the effects of video-based fitness training on weight loss and self-esteem in other age groups. Low-intensity exercise was part of the intervention strategy in this study. Future researchers are advised to create moderate- and high-intensity workouts. The study's training videos were pre-recorded. We recommend that future research examine the efficacy of online platforms for exercise training. The children had no say in the workout regimen because it was prearranged. Participants in future research should be free to select the kind of exercise they want. Self-esteem differences related to extra body weight occurred among sex groups. A closed-ended questionnaire was used to measure self-esteem in both the pre-test and post-test, which might have affected how truthful parents were in their responses. Future research is advised to take follow-up testing into account.

Conclusions

When children with obesity in the intervention group participated in a 12-week fitness program, their weight and BMI reduced and their self-esteem increased. Reduction in self-esteem among children is one of the most devastating effects of obesity, which can have detrimental psychological and physical effects. Families and educational institutions may be interested in using the fitness program created in this study to help children with obesity lose weight and manage it. One practical choice for at-home fitness programs to fight childhood with obesity is the use of exercise instruction films.

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