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The Impact of Healthy Life Style Program for Improving Body Image and Self-Esteem among Female Adolescents

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ABSTRACT

Background: Self-esteem greatly influences a person's health and lifespan. Several things influence adolescent body image, including social environment, community, society, media, as well as friends and family.

Purpose: This study was designed to examine the impact of healthy life style program on body image as well as self-esteem within female adolescence.

Methods: A randomized controlled trial (RCT). The objective was to choose Fifty female adolescent students who fulfilled the inclusion criteria and then randomly assign them to one of two groups, keeping the randomization process concealed until it occurred. The participants were randomly divided into two equal groups. The Healthy life style Program group (GA) received aerobic exercise, Control group (GB) who didn't participate in any exercises. This study conducted at al-Nasr Hospital Girls School in Helwan. Rating Scale was used to assess the adolescence female students' body image and self-esteem prior to the program and following finishing the program.

Results: The healthy life style program group revealed a significant improvement on body image and self-esteem with $p < 0.05$.

Conclusion: Healthy life style program had a beneficial impact on body image and self-esteem on female adolescence.

Key words: Healthy life style Program - body image - self-esteem.

1.Introduction

The years among the ages of ten and nineteen are known as adolescence (Hunt and Eisenberg, 2010). According to Gardner et al. (2012), it's a critical time for people to develop long-term healthy behaviors. Vulnerability in later life is significantly influenced by major health-related behaviors that start at this period and continue into adulthood (Viner et al., 2015).

According to the World Health Organization (2014), alcohol intake, having a bad diet, lack of physical activity, and using tobacco products are the four main risk factors for developing chronic diseases in adulthood. This could imply that adolescent healthy behaviors reduce the risk of developing chronic illnesses as adults. There is good evidence that the primary health habits for children and adolescents that are linked to their quality of life and health status include eating a diet high in fruits and vegetables, exercising regularly, avoiding screen time, and abstaining from alcohol and tobacco (Marques et al.,2019. Marques et al., 2020)

According to many studies (Compas & Reeslund, 2009; Sawyer et al., 2012), adolescence is marked by various changes in the body, mind, social life, and emotions.

This distinctive adolescent era is characterized by quick and massive development (Compas & Reeslund, 2009). Adolescents' health is influenced by how they manage these changes as well as transitions (Sawyer et al., 2012). Adolescents may become more susceptible to new hazards but they may also become stronger as they get access to new resources as well as protective factors (Compas & Reeslund, 2009). Lifestyle patterns and behaviors are formed during adolescence and typically persist into adulthood (Ozer & Irwin, 2009; Sawyer et al., 2012; Viner et al., 2012).

There are significant developmental consequences for psychological well-being during the adolescent period (Hunt and Eisenberg, 2010). In addition, there are a number of psychological issues that might arise at this time, and it can be challenging to maintain a healthy lifestyle in a new setting (Eisenberg et al., 2017). Having a bad body image can greatly affect a person's mental and physical health, according to studies. Consequently, these problems can be better addressed by providing an explanation of body image and the factors that predict it (Johnson, F., & Wardle, J.2015)**.**

According to Dohnt, and Tiggemann (2016), a person's body image involves their attitude toward themselves, their judgment of themselves, their capacity to sense the impact of their own actions on life, and their perception of their own body in comparison to an idealized representation of it.The opinions and assessments of others regarding one's physical appearance also have a significant impact on one's self esteem (Gattario, 2016).

A person's self-esteem, which is characterized as a "positive or negative attitude towards a specific object, specifically, the self," gives him a sense of worth. Everyone has an inherent capacity to grow in self-esteem and respect for others (WHO, 2014). Bos et al. (2010) and Moksnes and Espnes (2013) discovered that people with low self-esteem had worse health outcomes, whereas those with high self-esteem had better health. High levels of self-esteem in adolescence are linked to greater life satisfaction and fewer somatic complaints in adulthood, for example, suggesting that adolescent self-esteem may influence adult outcomes (Birkeland et al., 2012).

According to Bartels et al. (2013), low self-esteem is linked to anxiety, depression, as well as eating disorders in addition to lower academic accomplishment. However, it has been shown that having a strong sense of self-worth is linked to having excellent mental health, and

that fostering and maintaining self-worth is a crucial component of prevention overall mental health improvement (Mann et al., 2004). Since competition at school has been shown to have a significant impact on adolescent self-esteem, the school provides a potentially therapeutic setting (Strange et al., 2005). Healthy lifestyle choices, such regular exercise and eating a balanced diet, are linked to mental and self-satisfying outcomes. For example, exercise has been linked to adolescents' high self-esteem (Biddle & Asare, 2011, Ortega et al., 2008, Parfitt & Eston ,2005, Schmalz et al., 2007).

An integral part of adolescence is physical activity (PA). It is generally acknowledged as crucial for their physical well-being throughout their adolescent years and beyond (WHO, 2017), especially because PA habits developed during this time typically persist throughout adulthood (Bauman et al., 2012). According to WHO (2017) and Wold (2009), adolescents in Pennsylvania have the opportunity to socialize, learn new things, work together, and achieve personal growth. Helsedirektoratet (2016) found that at the age of 15, about 58% of boys and 43% of girls in Norway get the necessary quantities of physical activity. Among adolescents around the world, 80.3% do not engage in sufficient physical activity as per the guidelines set out by Hallal et al. (2012). According to Kohl 3rd et al. (2012), "physical inactivity is the 4th most common cause of death worldwide." This highlights the significant public health concern of being physically inactive.

Aerobic training as well as anaerobic training are two forms of physical fitness. Aerobic exercise, which includes activities like jogging, swimming, and cycling, gets the heart and lungs working harder to provide oxygen to the muscles. Weightlifting and short bursts of jogging are examples of anaerobic activities since they do not deplete fuel via the utilization of oxygen (Berliana, 2017). All of the body's organs benefit from this form of exercise, and it also aids in improving calorie balance and controlling weight. As a further benefit, it strengthens bones and muscles, lowers blood pressure and the likelihood of cancer, and enhances cardiovascular health (Micallef, 2014).

Although, the evidence for positive effects of healthy life style program on body image and self-esteem is growing, further studies on effects of healthy life style program are still recommended. So, this study was carried-out to examine the impact of healthy life style program on body image as well as self-esteem within female adolescence.

2. Materials & Methods:

2.1. Patients:

This study included 50 female students with age ranged (17 to 19). These participants were selected from al-Nasr Hospital Girls School in Helwan, Cairo, Egypt and were participated after signing the informed consent.

Inclusion criteria: Female students only, and BMI of 30 and above, were according to National Institutes of Health.

Exclusion criteria: The students were excluded if they had (1) BMI less than 30, (2) structural, inflammatory, infectious, metabolic, congenital, traumatic spinal disorders and spinal or lower limb surgery., (3) male students.

2.2. Research Design: A randomized controlled trial (RCT)

Sample: The sample size equation was generated utilizing G-power version 3.1.1 for power analysis, and a purposive sample of fifty female students was used. The significance threshold was set at 5 (one-sided), and the effect size was (.03), with a power of.95 (β=1-.95=.05) at alpha. There were twenty-five people in each of the two groups. All participants were functionally

independent, could understand well, and follow orders and cooperative. This study conducted at al-Nasr Hospital Girls School in Helwan, Cairo, Egypt. From October to December 2022 was implemented to examine the impact of healthy life style program on the body image and self-esteem among secondary female adolescents.

Randomization and allocation: Two groups are allocated. Utilizing a coin toss, the groups were assigned randomly. The students' 50 codes were mixed up extensively after being concealed upon a slip of paper, and 25 were chosen to participate in the GA. Group B (GB) consists of the remaining 25 students. **Blinding:** Double blind study in which researchers and participants did not know the method of randomizing was used.

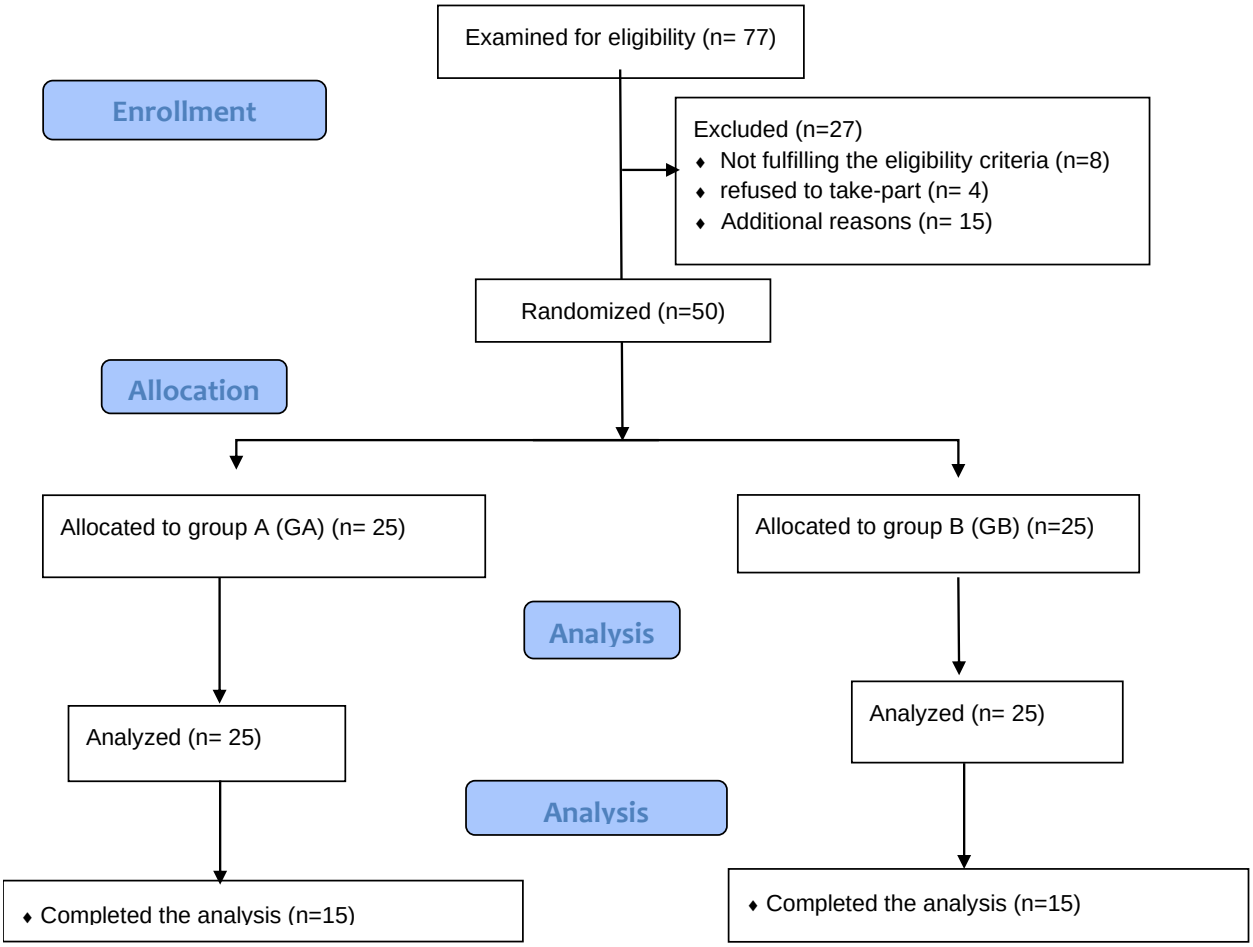

Figure (1): Study Flow Chart

2.3. Procedure

In order to get informed permission from participants, the investigator contacted those who were eligible for the study. The participant was asked to answer all questions about the tool and the program that was put into place in order to assure their cooperation and acceptance throughout the assessment.

2.4. Assessment:

The investigators introduced themselves to the subjects, went over the program's goals, and gave them an overview of where and when the sessions would be held during the

introductory session. The investigators also took the participants' attendance during the sessions as a commitment to attending the program and worked to establish positive relationships with them. In addition, data from the appropriate baseline assessments were collected before the program began using the following instruments: personal data questionnaire, anthropometric measures, exercise habits, body image scale, as well as self-esteem scale.

The participants were evaluated by using the body image and self-esteem Scale prior to and after the program, also by measuring body mass index. The Scale was filled from the researcher by the participants or by the participants themselves and then revised by the researcher. During the study, the researchers helped in taking the suggestions of the participants, and give any ideas about the application of the session.

1-Body image scale:

The purpose of this scale was to assess how one perceives their own or others' body images. The Arabic version involved 27 items that divided into two domains; the first domain describes the perception of the person to his body which may be positive or negative. The second domain refers to the perception of the person to his body through the opinion of others. All items were answered utilizing a 3-point Likert scale format ranging from 1 - 3, 1 (No), (2) Sometimes, and (3) yes. The scale score ranges from 27 that, indicates low score and 81 which indicates high score. A lower score less than 67 refer to negative body image satisfaction, while the higher score more than 67 indicates positive body image satisfaction. This tool has shown high internal consistency equals to 0.01and alpha coefficient was 0. 83.

2-Self-esteem scale:

Rosenberg (1965) initially created this instrument to collect data on positive and negative self-evaluations in order to get a better measurement of overall self-worth. There were ten items on this scale. Answers to all questions are on a 4-point Likert scale, with 1 being strongly disagreeing, 2 being disagreeing, 3 being in agreement, and 4 being very much in agreement. Scores below 15 indicate poor self-esteem and scores over 25 show high self-esteem; the scale spans from 10 to 40. A normal range is scores among 15 and 25, while scores above 25 indicate high self-esteem. This tool has shown constructed validity and internal reliability coefficient were 0.85 and 0.87 respectively.

2.5. Treatment procedures

Group A (aerobic exercise): Before every session, participants warmed up for five minutes by stretching as well as walking slowly on the treadmill. Then, following the guidelines set out by the American College of Sports Medicine, they were instructed to walk or jog quickly on the treadmill at a speed that generated exercise heart rates ranging from sixty percent to seventy-five percent of their age-adjusted predicted maximal heart rate (ACSM, 2000). The formula that was used to calculate the aerobic heart rate range for every person was (220 minus age) multiplied by either 0.60 (the lower boundary) or 0.75 (the upper boundary). For every session of medium-intensity aerobic exercise, the treadmill speed was modified as needed to keep participants within the range of aerobic exercise's lower as well as upper limits. For six weeks, participants exercised for 45 minutes three times a week. Sessions on the treadmill were followed by a short cooling down break.

Group B (control group): During the course of the study, they did not engage in any physical activity. In order to study or read the popular publications, participants were told to remain seated for half an hour. Both at baseline and six weeks into the trial, participants filled out the BAI and SAS.

Data Collection Tools:
Demographic data and anthropometric measurements were developed by the investigator to register all related demographic data of the sample and their measurements as first part (code, year grade, anthropometric measurements as (height, weight, BMI).

Ethical consideration
In accordance with the principles outlined in the Declaration of Helsinki, this study was given approval by the faculty of physical therapy at Cairo University's ethical research committee (No: P.T.REC/012/004470).

3. Statistical design:
1-Descriptive statistics used in this study were the mean as well as the standard deviation (SD).
2-Values in the same study domain were compared before and after treatment utilizing two tail-dependent t-tests.
3-We used two tail-independent t-tests with a 0.05 level of significance to compare the differences among the two study domains. All data were analyzed using SPSS software, version 20.

4.Results

Descriptive analysis for the cases in the two study domains encompasses the mean and stander deviation for age, weight, height, as well as body mass index. There were no clear variances between the groups (Table1).

Table 1. Physical characteristics of study cases:

Variable	Group A (Mean ±SD)	Group B (Mean ±SD)	T	p-value	Significant
Age	17.1 ± 0.32	17.5 ± 0.31	0.67	0.4	NS
Weight (Kg)	69.7±7.22	71.3±7.77	0.52	0.6	NS
Height (Cm)	159.8±4.11	162.8±8.11	0.44	0.6	NS
BMI (Kg/m2)	27.29±4.73	26.90±9.91	0.25	0.8	NS

NS: non-significant

Body Image

As presented in **table (2)** and illustrated in **figure (2),** the mean value of Body image level for **Group A** at the entry of study was **57.2** ± **(14.72526)** and changed to 76 ± (8.16497) post treatment. There was a significant difference in the paired t-test of the Body image values between before and after assessment where the t-value was (-4.108) and P-value was (.000). The mean value of Body image level for **Group B** at the entry of study was **61.4 ± (3.95811)** and changed to **62.2 ± (4.58258)** after treatment. There was a significant difference in the paired t-test of the Body image values among before and after assessment where the t-value was (1.000) and P-value was (.000).

Self-Esteem

As presented in **table (2)** and illustrated in **figure (2),** the mean value of self-esteem values for **Group A** at the entry of study was 37.2000 ± (3.50000)and changed to 47.2000 ± (8.74166)after treatment. There was a significant difference in the paired t-test of self-esteem values between pre and post assessment where the t-value was (-8.452) and P-value was (.000). The mean value of self-esteem values for **Group B** at the entry of study was 40.4800 ± (1.04563) and changed to 42.4800 ± (5.07543) after treatment. There was a significant difference in the paired t-test of the self-esteem values between pre and post assessment where the t-value was (-2.449) and P-value was (.022).

Table (2): The mean value of body image and self-esteem values for both groups

		Mean Std. Deviation		t-value	p-value
		PRE	POST		
GA	**Body image**	57.2 ± (14.7)	76.0000 ± (8.2)	-4.108	**.000**
	Self-esteem	37.2 ± (3.5)	47.2000 ± (8.7)	-8.452	.000
GB	**Body image**	61.4 ± (3.95811)	62.2000 ± (4.6)	1.000	.327
	Self-esteem	40.5 ± (1.0)	42.5 ±(5.1)	-2.449	.022

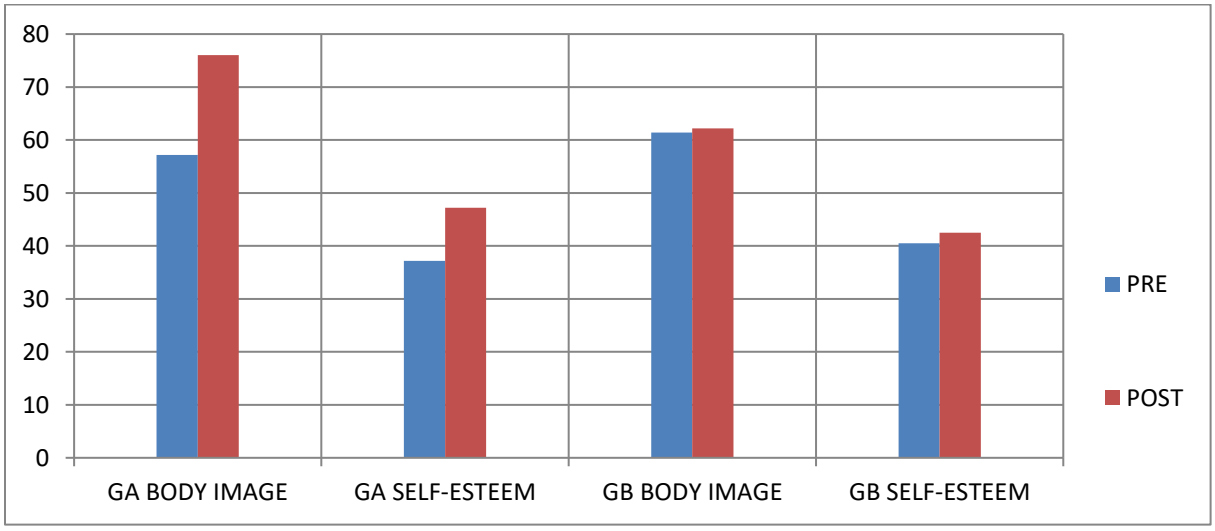

Figure (2) the mean value of body image and self-esteem values for both groups

The two Groups comparison:

As presented in **table (3)** and illustrated in **figure (3)** revealed the independent t-test results for body image as well as self-esteem among groups A and B. A statistically significant difference has been detected between the post-measures of Group (A) and the post-measures of Group (B) in body image and self-esteem. Where the t-value was (8.045, 2.335) and p-value was (.000, .025) respectively.

Table (3): the independent t-test results for body image and self-esteem between groups A and B

Outcome measure	GA (Mean ±SD)	GB (Mean ±SD)	t value	P value	S
Body image	76.0000 ± (8.16497)	61.4000 ± (3.95811)	8.045	.000	S
Self-esteem	47.2000 ± (8.74166)	42.4800 ± (5.07543)	2.335	.025	S

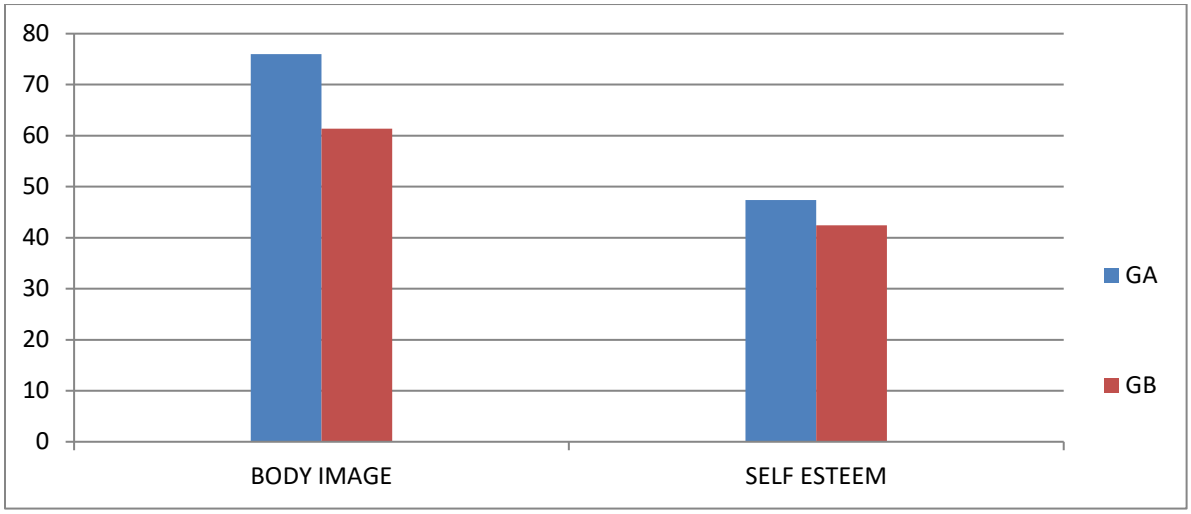

Figure (3): the mean value of body image and self-esteem values post treatment for both groups

Discussion:

Aerobic exercise improves self-esteem by improving women's perceptions of their bodies. Many people believe that aerobic exercise is the key to getting the "ideal" body type (Lindwall & Aşçi, 2014),

Analyzing the data from both groups independently, the results showed that there had been significant improvements across both body image and self-esteem among female adolescents in the present study, which examined the effects of a healthy lifestyle program on these variables. Furthermore, the strongest correlation between physical and global self-esteem was shown to be body attractiveness (Lindwall and Aşçi 2014). Adolescents often engage in aerobic exercise in an effort to achieve or maintain a specific body type (Bélanger et al., 2011; Kahn et al., 2008).

Improving one's physical appearance can have a positive impact on self-esteem. This is because it can lead to receiving positive feedback from others as well as oneself, as a result of the individual's extensively work and achievement of what is considered the "normal" or "ideal" body in their culture (Lindwall & Aşçi, 2014). As stated by Smith (2010), physical appearance and/or beauty is the primary and most influential factor in determining self-esteem in adolescent females. Additionally, a study revealed that self-esteem in certain adolescent females could be influenced by this factor (Seidah & Bouffard, 2007).

Alternatively, many females feel body pressure, and an unhealthy focus on one's physical appearance can have harmful consequences (Bakken, 2018). Because of all the physical changes that happen throughout puberty, many adolescents' females also experience body image issues (Smith, 2010).

In addition, teasing about appearance occurs more often among girls than boys during aerobic activity, which has a detrimental effect on them and may lead them to stop training altogether (Slater and Tiggemann, 2011).

Furthermore, the beneficial impacts of aerobic exercise, including improved self-esteem, might be reduced if one becomes overly self-conscious, critical, and focused on one's physical appearance (Fox, 2003). Therefore, a healthy body image should be the goal of therapies, because body perception is complex.

Physical health, via disease prevention and improved general body function (WHO, 2017), and mental health, by serving as a buffer against the adverse consequences of chronic stress, are just a few ways in which aerobic exercise can positively affect adolescent health (Clow & Edmunds, 2014).

The mental and physical well-being of female adolescence can benefit from aerobic exercise for a variety of reasons. For example, studies have shown that it can reduce anxiety and depression in this age group (Biddle & Asare, 2011; Eime et al., 2013; Lubans et al., 2016). It may additionally enhance cognitive function, leading to better classroom behavior, academic achievement, as well as cognitive performance (Biddle & Asare, 2011). Social skills, self-confidence, self-knowledge, emotional control, as well as a decreased risk of thoughts of suicide are also advantageous (Eime et al., 2013).

For adolescent females, exercising is a great way to spend time with friends or meet new people (WHO, 2017). Positive Youth Development has replaced the prior view of puberty as a time of "storm and stress" for girls.

In this opinion, there are a lot of reasons why exercising is important. To begin, it is beneficial to the physical, emotional, and social health of many adolescent females to participate in physical activity (Bakken, 2016). Second, research has shown that Positive Youth Development Questioners are favorably correlated with athletic activity (Eime et al., 2013). Also, for adolescent females, participating in sports as an extracurricular activity was more beneficial to their development than other forms of sedentary lifestyle. Aerobic exercise has several developmental and learning benefits for adolescent girls, including the formation of habits that can persist throughout puberty (Bauman et al., 2012).

Also, having a strong social network, having positive friends and family, and having the support of responsible adults are all protective factors that can help a person grow and develop mentally and emotionally (Eime et al., 2013).

These results lend support to the point of view Developing Youth in a Positive Way: Aerobic exercise is an excellent means by which adolescent females can improve their physical and mental health.

Aerobic exercise has numerous impacts on adolescent females' self-esteem, including physiological, social, and psychological ones. In addition, the effects on adolescents' self-esteem may vary depending on the type of exercise environment they participate in. Participating in group activities, as compared to solo sports, may provide greater opportunities for social input from others (Lindwall & Aşçi, 2014).

Consistent with this view is the review as well as meta-study by Liu et al. (2015), which indicated that aerobic exercise in school and gyms had greater effects on self-esteem than in other settings, along with the review by Eime et al. (2013), which indicated that organized and/or team sports had a greater impact on self-esteem than individual sport.

Conversely, some activities may have unexpected adverse effects. Adolescents who participated in aesthetic activities, a form of cardiovascular exercise, were more likely to

experience symptoms of eating disorder, shame around their bodies, and anxiety related to their appearance (Slater and Tiggemann, 2011). This suggests that various activities and settings may have varying effects on self-esteem.

A number of beneficial social effects, including improved interpersonal relationships, social skills, the formation of new friendships, and greater cooperation, were also discovered to be connected with athletic participation by Eime et al. (2013). Engaging in cardiovascular exercise alongside others may promote qualities such as loyalty, partnership, improved friendships, pleasant relationships, and constructive feedback, each of which can impact self-esteem (Fox, 2003; Lindwall & Aşçi, 2014).

Adolescent females body image as well as self-esteem were found to improve significantly in this study, there is strong evidence that aerobic exercise improves teenage girls' self-esteem and body image (Biddle & Asare, 2011; Eime et al., 2013; Ekeland et al., 2005; Liu et al., 2015; Lubans et al., 2016; Schmalz et al., 2007; Bélanger et al., 2011; Kahn et al., 2008; Lindwall & Aşçi, 2014). In a nutshell, this study's findings are in line with previous study which concluded that Healthy life style program method such as aerobic exercise has beneficial in improvement in self-esteem and body image in females' adolescents.

Conclusion:
Healthy life style Program had a beneficial impact on body image and self-esteem on female adolescence.

Study limitations
The current study is limited by small group size, Changes of patient's lifestyle, Motivations difference, psychological status and patients' limitation. Further studies needed to support results and conclusions of this study.

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Disclosure statement
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Conflict of interest
Authors state no conflict of interest.

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