

STUDY ON THE IMPACT OF AEROBIC EXERCISE ON SELF-IMAGE IN YOUNG WOMEN

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Abstract. *We all know the importance of self-image in the management of everyday tasks arising from the dynamics of changes in modern society, which involves consistent coping skills and increased resistance to effort and stressors; thus, a strongly positive self-image enhances coping skills, and life obstacles are perceived as challenges to be overcome in order to achieve the intended goals. The purpose of our paper is to highlight the impact of aerobic exercise performed for 16 weeks on the self-image of young women aged between 19 and 24 years, students at different faculties within the “Politehnica” University of Bucharest (UPB). The research was conducted on a sample of 62 girls, of whom 31 were part of the experiment group that participated in an aerobic exercise programme performed 3 times a week, over a 16-week period; the control group was also made up of 31 girls in the final years of study at UPB, but their curriculum did not provide sports activity classes and they did not practice physical exercise independently; however, some of them used to practice sporadically different physical activities. The systematic practice of aerobic exercise had a positive impact on the self-image of the physical and mental Ego for the girls in the experimental group, with statistically significant differences, as shown by the statistical processing.*

Keywords: *self-image, aerobic exercise, young women.*

Introduction

Man self-analyses and self-interprets as both a physical reality, building a picture of his physical Ego, and a psychosocial reality, building a picture of his mental Ego as a result of insight into psychosocial skills and traits.

Our body is the support for our conscience and self-identity, as well as the instrument by which we physically act and express our own psychic contents (Bălan & Mitrache, 2016).

This processuality is quite complex, and the role of body image is essential, with deep implications on the harmonious development of the individual.

It is known that systematic physical activity shapes a desirable weight among young people, thus having a positive impact on their body image.

Therefore, controlling body weight and the relationship with one's own body in appearance management is actually the consequence of the implications induced by constant physical training.

Body image represents the biological identity of the individual, so it is natural to pay special attention to body shaping and harmonisation, and physical exercise plays an essential role in this regard.

Appreciation of body image leads to self-esteem, which is associated with self-confidence and the development of a realistic attitude towards life with all its problems; body image and self-esteem are in an interdependence and mutual inter-influencing relationship, valorising the individual in the socio-cultural context.

As known, positive self-esteem strongly impacts performance in all activities, so individuals with high levels of self-esteem and very confident in themselves manage to mobilise more for the fulfilment of personal goals, thus reinforcing their good opinion of themselves. On the contrary, in those with negative self-esteem, the number of failures is increased, which deepens even more their bad perception of themselves.

The perception of one's own potential is influenced by the social groups with which the individual interacts and to which he or she belongs.

The period of adolescence and young adulthood is a sensitive period during which body image plays a special role compared to other life stages in shaping global self-image, with implications on the development of the whole personality.

According to Rosenberg and McCullough (1981), self-esteem is also marked by the phenomenon of mattering (to others), which involves three main components: awareness (the feeling that we are interesting and noticed by significant others), importance (the feeling that we are a concern of significant others) and dependence (the feeling that significant others rely and depend on us). The lack of the three components listed above is often associated with low self-esteem and even with the onset of depression.

The literature mentions the physiological effects of self-esteem, a low level of self-esteem being closely related to a weakened immune system, hence the individual's vulnerability to disease; it also seems to have an influence

on the level of serotonin, a neurotransmitter – the hormone of happiness, with a beneficial role in shaping more complex behavioural responses; thus, there is speculation regarding an increased level of serotonin in individuals with high levels of self-esteem, which denotes a causal relationship between the neuro-endocrine and psychosocial aspects.

In their study, Hasanpourm, Tabatabaei, Alavi and Zolaktaf (2014) highlight that aerobic exercise has led to increased self-esteem in orphaned Iranian girls aged 13 to 19 years.

The study conducted by Segar et al. (1998) revealed a positive impact of aerobic exercise performed over a 10-week period on breast cancer survivors, who experienced a decrease in depressive and anxiety symptoms, but no statistical differences in the level of self-esteem were recorded.

Mousavi Gilani and Dashipour (2016) highlight in their study an improvement in self-esteem in Iranian male students following an aerobic exercise programme applied for 8 weeks.

The study conducted by Salamuddin, Harun and Al-Rashed (2014) on a sample of 120 students showed that the sample of girls who performed aerobic exercises had a higher self-esteem compared to the girls from the samples who participated in physical activities such as walking and running.

García-Martínez, De Paz and Márquez (2012) emphasise an improvement in the health status of women diagnosed with fibromyalgia following an aerobic exercise and stretching programme applied for 12 weeks at a rate of 3 times per week, their mental status being also better, with positive effects on increasing the self-esteem of patients.

After the aerobic exercises, an improvement in both the motor repertoire and coordination of girl students was noted (Grigoriu, Pelin, & Wesselly, 2016).

Research purpose

This paper aims to highlight the impact of aerobic exercise performed for 16 weeks on the self-image of young women aged between 19 and 24 years, students at different faculties within the “Politehnica” University of Bucharest (UPB).

Material and Methods

For the experiment, 62 female subjects aged 19 to 24 years were selected; all gave their informed consent to participate voluntarily in the proposed research.

The study was conducted on a sample of 62 girls, of whom 31 were part of the experiment group that took part in an aerobic exercise programme for 16 weeks, 3 sessions a week, with a duration of 60 minutes per session, including warm-up and cool-down exercises (10 minutes each).

The cool-down part, lasting 10 minutes, involved stretching exercises with breathing control, accompanied by relaxing music.

In parallel with the proposed aerobic programme, participants were suggested to eliminate/limit the amount of sweets and to stop eating after 6:00 P.M. in order to master habits that define a healthy lifestyle.

The control group was also made up of 31 girls in the final years of study at UPB, but their curriculum did not provide sports activity classes and they did not practice physical exercise independently; however, some of them used to practice sporadically different physical activities.

In this paper, the following research methods were used: scientific documentation, the questionnaire method (the Rosenberg Scale), Bioelectrical Impedance Analyses (BIA), experimental method, mathematical and statistical method, graphical method.

Starting from the above-mentioned ideas about self-image, this paper uses the Rosenberg Self-Esteem Scale that measures self-esteem, self-confidence and self-image. It consists of 10 items, namely statements to which respondents express their agreement/disagreement using a scale from 0 to 3 (strongly agree, agree, disagree, strongly disagree), so the scores range from 0 to 30.

According to the Rosenberg Self-Esteem Scale, scores below 15 suggest low self-esteem, lack of self-confidence and a poorly defined identity (Goran Bazarea & Mărășescu, 2007).

After applying the Rosenberg Scale to our subjects, their scores fell within the following groups:

- 0-5 points – strongly negative self-image
- 6-10 points – negative self-image
- 11-15 points – moderately negative self-image

- 16-20 points – moderately positive self-image
- 21-25 points – positive self-image
- 26-30 points – strongly positive self-image

The items of Rosenberg Self-Esteem Scale are:

- On the whole, I am satisfied with myself.
- At times, I think I am no good at all.
- I feel that I have a number of good qualities.
- I am able to do things as well as most other people.
- I feel I do not have much to be proud of.
- I certainly feel useless at times.
- I feel that I am a person of worth.
- I wish I could have more respect for myself.
- All in all, I am inclined to think that I am a failure.
- I have a positive attitude towards myself.

Both groups responded to the questionnaire in the same period, namely before the start of the aerobic programme and at the end of the 16 weeks.

The experimental groups were assessed the evolution body weight, fat body percentage and muscle mass using the Tanita FitScan BC-601.

Results

Table 1. *Statistical indicators – initial-final testing – Experiment group*

Statistical indicators	Initial testing	Final testing	Differences	Final-Initial testing
Mean	19.10	22.52	Mean difference	3.42
Median	19.00	22.00	Progress	17.9%
Standard deviation	4.55	3.47	95% Confidence interval	(2.24; 4.59)
Minimum	8.0	15.0	Standard deviation	3.20
Maximum	28.0	28.0	Two-tailed dependent	t p
Range	20.0	13.0	t-test	5.95 0.000
Coefficient of variation	23.8%	15.4%	Effect size	1.07

In the group of girls practicing aerobic exercise (Table 1), self-esteem has improved, according to the score that increased by 3.42 points on average, from 19.10 to 22.52, in the final test. As a percentage, the progress is 17.9%. With 95% confidence, the mean difference falls within the (2.24; 4.59) range. The data spreading is relatively homogeneous in both tests.

The mean difference is statistically significant, $p < 0.001 < 0.05$ for $t = 5.95$ and $df = 30$. The effect size index reveals a very large mean difference. The average values and individual progress of athletes are graphically shown in Figure 1 and Figure 2.

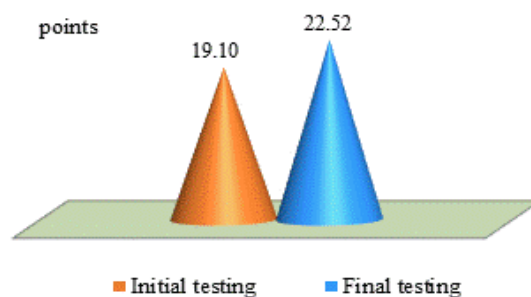


Figure 1. Average values – Experiment group

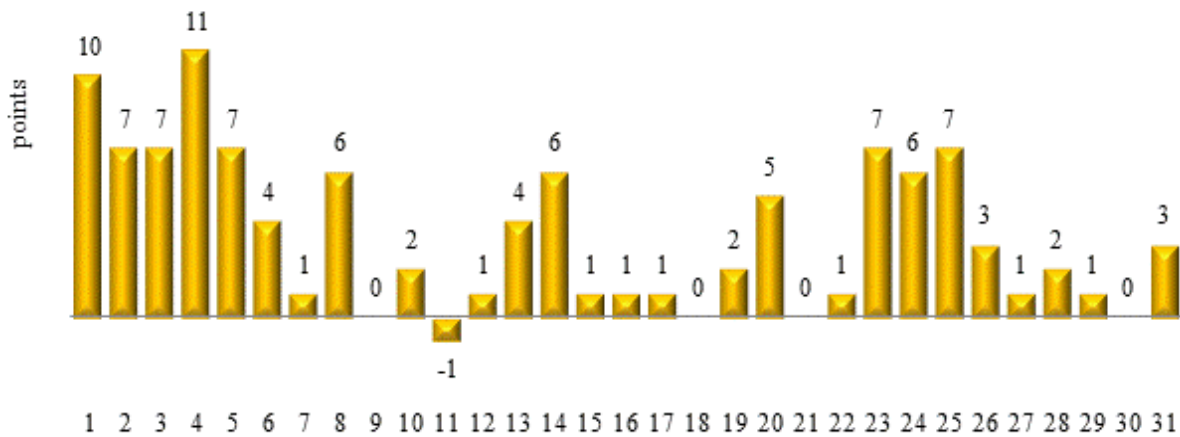


Figure 2. Difference between individual results (final-initial testing)

Table 2. Statistical indicators –initial-final testing – Control group

Statistical indicators	Initial testing	Final testing	Differences	Final-Initial testing
Mean	19.71	19.97	Mean difference	0.26
Median	20.00	21.00	Progress	1.3%
Standard deviation	4.79	4.55	95% Confidence interval	(0.03; 0.49)
Minimum	6.0	8.0	Standard deviation	0.63
Maximum	28.0	28.0	Two-tailed dependent t-test	t p
Range	22.0	20.0	t-test	2.28 0.030
Coefficient of variation	24.3%	22.8%	Effect size	0.41

In the control group made up of girls sporadically involved in sports activities (Table 2), self-esteem has slightly improved, according to the score that increased by 0.26 points on average, from 19.71 to 19.97, in the final test. As a percentage, the progress is 1.3%. With 95% confidence, the mean difference falls within the (0.03; 0.49) range. The data spreading is relatively homogeneous in both tests. According to the dependent t-test, the mean difference is statistically significant, $p = 0.030 < 0.05$ for $t = 2.28$ and $df = 30$. The effect size index reveals a small-to- moderate mean difference.

The average values and individual progress of athletes are graphically shown in Figure 3 and Figure 4.

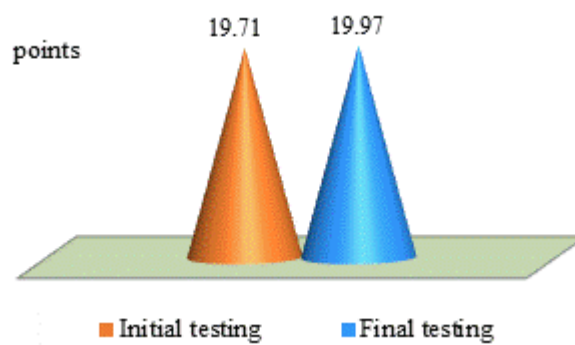


Figure 3. Average values – Control group

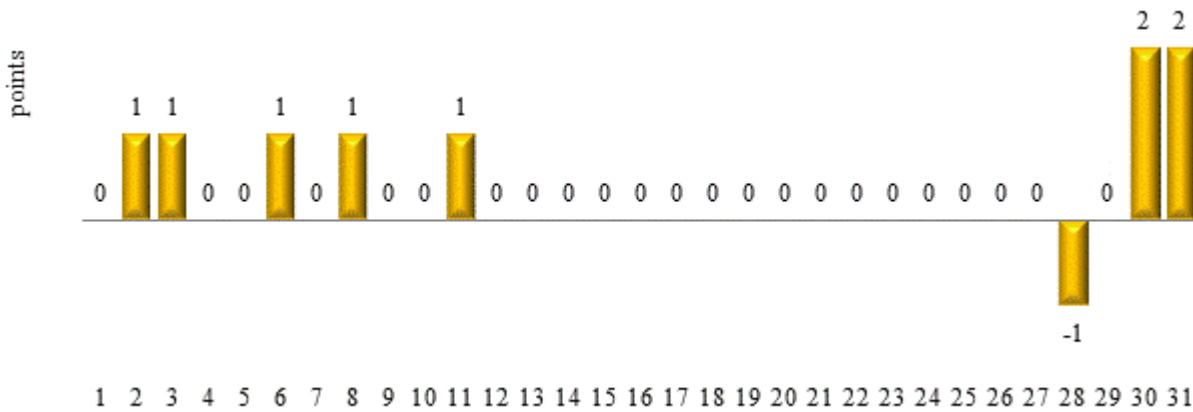


Figure 4. Difference between individual results (final-initial testing) – Control group

Table 3. Statistical indicators – final testing – Experimental (aerobic) group versus control group

Statistical indicators	Experimental group	Control group	Difference in results between groups		
Mean	22.52	19.97	Mean difference	2.55	
Median	22.00	21.00	Mean difference (%)	11.3%	
Standard deviation	3.47	4.55	95% Confidence interval	(0.71; 4.39)	
Minimum	15.0	8.0	Standard deviation	5.01	
Maximum	28.0	28.0	Two-tailed independent t-test	t	P
Range	13.0	20.0		2.48	0.016
Coefficient of variation	15.4%	22.8%	Effect size	0.45	

Comparing the scores achieved by the two groups in the final tests (Table 3), it can be seen that self-esteem is better for the aerobics group, whose mean score is higher by 2.55 points on average than the score of the control group. As a percentage, the difference is 11.3%. With 95% confidence, the mean difference falls within the (0.71; 4.39) range. The data spreading is relatively homogeneous in both tests.

The results of the independent t-test show a statistically significant mean difference between the two groups, $p = 0.016 < 0.05$ for $t = 2.48$ and $df = 56$. The effect size index reveals a moderate mean difference. The average values are graphically shown in Figure 5.

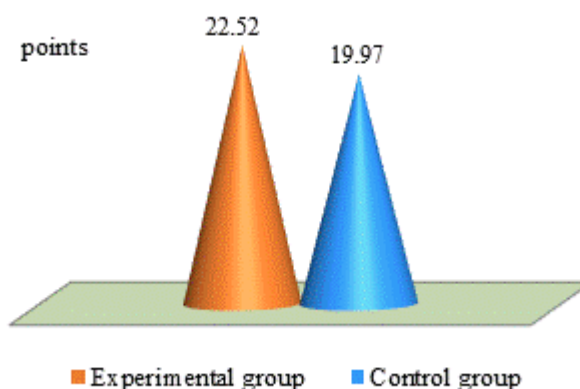


Figure 5. Average values – Experimental (aerobic) group versus control group

In the initial and final testing of the experimental group, we used the Tanita FitScan BC-601 to obtain the following indicators: weight body, percentage body fat and muscle mass (Figures 6, 7 and 8).

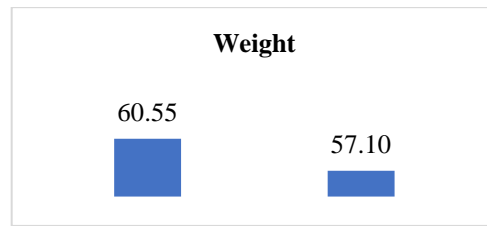


Figure 6. Average values for weight – Experimental (aerobic) group: initial testing - final testing

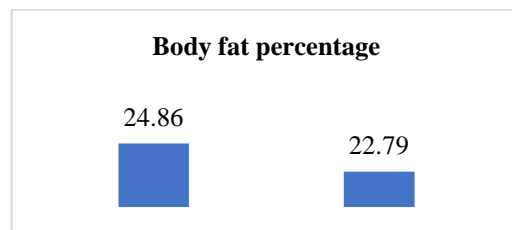


Figure 7. Average values for body fat percentage – Experimental (aerobic) group: initial testing - final testing

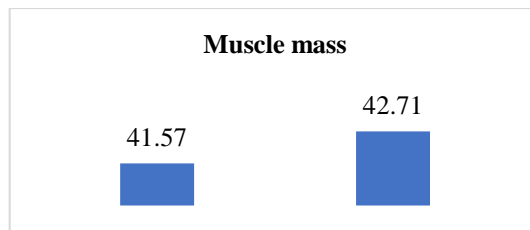


Figure 8. Average values for muscle mass – Experimental (aerobic) group: initial testing - final testing

Conclusion

Our research has highlighted numerous benefits impacting the physical Ego, the girls being pleased with their new look given by muscle toning and weight loss as a result of both participating in aerobic sessions.

The statistical processing of final test results shows that self-esteem is better for the group that has performed systematic aerobic exercise over 16 weeks, the mean scores of both groups indicating that the average value of the experiment group is higher by 2.55 points compared to the control group.

The results of this study were in agreement with other previous findings such as the ones by Hasanpour et al. (2014), Salamuddin et al. (2014) and other studies in the literature.

The study conducted by Béres, Czeglédi and Babusa (2017) shows that even a single aerobic session has a positive effect on the body image in Hungarian women.

According to the obtained results, aerobic exercises are recommended to be an integral part of physical education lessons for young female students at non-profile faculties. However, the weekly frequency of the lessons should be much higher than the one provided in the current curriculum, being a valuable tool for intervention on the relationship between self-image, self-esteem and self-confidence.

Authors' Contributions

All authors contributed equally to this study and should be considered as main authors.

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