

A study of the effects of an aerobic training program on the social maturity of male non-athlete students: the case of an Iranian experience

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Abstract: The aim of this study is to evaluate the effect of an aerobic training program on the development of social maturity of non-athlete male students. The research method is semi-experimental. Sixty subjects participated in this study, and were assigned to two groups (test and control). Then by applying a training program (in test group) for a period of 12 weeks, the effect of training program on social maturity was studied. To collect data, a questionnaire which is based on Rao's Social Maturity Scale was distributed before and after the course. The results showed that social maturity rate of the participants was significantly different before and after the training program. Also, it was found that there was a significant difference between control and test groups after training program. A specific sport program can be effective in raising the social maturity level and its triple dimensions.

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1. Introduction

Physical education, as an important part of education system, has played as indispensable role in the physical, mental and social maturity of the students. It was reemphasized in National Summit on Physical Education, held at 24 January 2005 (London), during the UN International Year of Sport and Physical Education. The Summit brought together for the first time, leading experts from a range of disciplines and fields of study – professors, academics and practitioners in physical education – to debate the role of and need for physical education. Some issues regarding physical education including "the importance of physical competence as a means of enhancing self esteem, empowerment and social inclusion", and "the role of physical education as a positive learning experience for physical activity and prevention of obesity and promotion of healthy life styles" were taken into consideration (Declaration from the National Summit on Physical Education, 2005).

In the present time, universities have devoted as much attention to the students' health and physical care as they spend on their educational and academic growth (Bucher & Wuest, 1992). Accordingly, instructors and the teachers of physical education have effective roles in achieving the mentioned goals, and by adopting proper methods in teaching physical education courses can help students attain the intended aims and bring them health and a high spirit together with a growth in their personal, emotional and cultural maturity. So, we have intended to evaluate the effects

of physical exercise on the growth and social maturity of non-athlete students in this study.

Social maturity and physical activity

According to Thomanna & Cartera (2008) social maturity is a remarkable pattern of manners that the people should be able to achieve. A desirable level of such manners as sociability, a sense of responsibility, flexibility and being domineering with the intention of gaining positive values and feelings are intended in this sense. Recent research (e.g. Zimmerman, 2004; Castelli et al., 2007; Peterson et al., 2007) has proved that the growth of social features of people (independence, competitiveness, art and sporting activities) are the result of gaining experiences through interacting with the family, peers, friends and the cultural milieu of society.

Nowadays, social maturity has been so widely considered by most experts that it has led them to the belief that a person's social growth and maturity form the basis of his/her whole life. Thus, the fundamentals of one's social life are compatibility with others, being in agreement with them, and somehow trying to meet their needs and expectations (Shariatmadari, 1993). As a result, we can say that the growing tendency of people, specially the youth, towards sporting activities has come to be an indispensable must (Noorbakhsh, 2004). In this regard, sports physiologists believe that taking sporting activities and exercise are necessarily important in providing and fortifying social skills and social maturity (Castelli et al., 2007; Tomporowski et

al., 2008). Moreover, sports sociologists maintain that taking exercise is very important in forming personal bearings of the people (Noorbakhsh, 2004). Because of this, universities, based on their organizational responsibilities, have also exercised much attention to advancing participation in physical exercise and sports, so as to provide the students with conditions of all-inclusive growth, especially skills of life. Hence, experts in the field of physical education have done comprehensive research regarding this important fact (Hardman, 2008).

Many studies (e.g. Alleyne, 2003; Noorbakhsh, 2004; Castelli et al., 2007) have been conducted regarding physical exercise and its role in improving the mental health and well-being of the people. Considering the background of such studies, it is shown that those who continually take exercise have a better emotional balance and do better in sporting situations. Such studies also show that the youth taking part in sporting activities have experienced a positive growth in such aspects as:

- ☞ Physical well-being and proper way of life;
- ☞ Self-confidence and self-esteem;
- ☞ Making motor skills;
- ☞ Making social skills;
- ☞ Sports ethics and philanthropy;
- ☞ Having high spirits;
- ☞ Increased motives; and
- ☞ Increased social maturity.

Also, results from some studies propose that taking part in sports activities like games and collective plays causes cognitive as well as intellectual development of the people (Bjorklund & Brown, 1998; InstructorWeb, 2002). According to InstructorWeb (2002), "the relation between regular physical activity and intellectual development is so clearly established that in today's educational world, most school jurisdictions have made physical education mandatory for all students". In a study on people of 12 to 40 years of age, Brown (1967) has proved in that those taking exercise (isometric meditative ones) had a more developed social maturity than those not taking such courses (non-exercise $ES=0.08$; exercise $ES=0.86$). Dwyer and colleagues (2001), through a study on children of 7 to 15 years of age, showed that there was a close relation between physical health and social maturity. The study of Castelli et al. (2007), on 259 children 3 to 5, has also proved the same results.

From what has been already said, it can be said that by providing the students with different fields of sports and encouraging them towards taking them, it is tried to, in addition to physical provision of the students, make for their personality growth in social aspects. Therefore, evaluating the maturity level of

non-athlete students besides advancing the knowledge of this field can result in actual outcomes which can be used by those involved in planning and managing physical exercise.

Aim of the study

The main intention of this study was to conduct a special aerobic plan and measure its effects on the growth of social maturity of the non-athlete students. Accordingly, the study revolves around two main problems namely "what level of social maturity and its triple dimensions do the non-athlete students have?" and "how effective can an aerobic exercise plan be in raising the social maturity of the students?".

2. Material and Methods

The present study was conducted in a semi-experimental way. In this method, an exercise plan was tried as the independent variable and by considering the control and test groups, the probable effect of this training plan on social maturity and its triple dimensions (social competence, personal competence, and interpersonal competence) of the non-athlete students was evaluated. For this purpose, two groups of control and test were selected who filled out the questionnaires before and after the plan.

The statistical community of this study contained all the male students of Islamic Azad University, Hamedan Branch, 60 ones of whom voluntarily took part in this study forming the two groups of control and test. Thus, the subjects were:

1. 30 non-athlete men (control group)
2. 30 non-athlete men (test group)

In order to gather the necessary data and information, the questionnaire of Rao's Social Maturity Scale was used. The original version of this scale has 90 items which is in the form of a 4-option range (quite agree, agree, quite disagree, disagree). For the mentioned scale, the grades 1, 2, 3, and 4 were assigned, respectively, with 10 as the lowest and 40 as the highest value of the social maturity in the measured scale. In addition to being measured in general, social maturity was also measured in its 3 dimensions of personal, social and interpersonal competence.

After selecting the subjects and getting their written agreement for taking part in all the process of the experiment, the questionnaire was handed to them before the exercise plan. The maximum aerobic capacity of the subjects was measured based on *Rockport Aerobic Test*.

Then, the subjects took a 12-week exercise course including walking, jogging and endurance running. Each week was devoted to 3 sessions, each for 20 minutes at the beginning extending to 45 minutes in the last sessions. All the subjects started with maximum 50 percent of their heartbeat which increased

to 80 percent in the 12th week (Table 1). Before starting the program, the subjects took a 10-minute warm-up session doing light and stretching exercise, they also had a 10-minute stretching exercise at the end of each session to cool down.

At the end of 12th session, the questionnaires were again distributed and gathered after completing.

Descriptive and inferential statistic methods were used for analyzing and evaluating the rough data so achieved. The descriptive approach was used for describing the features of the data taken from the control and test groups, and inferential one was applied for testing the presumptions of the study.

Table 1: The planned exercise program

<i>Weeks</i>	<i>Time devoted in minute</i>	<i>Exercise</i>	<i>Maximum heart rate</i>
1	15-20	Jogging	50%
2	20	Jogging	50-55%
3	20-25	Jogging	55%
4	25	Jogging	55-60%
5	25-30	Jogging	60%
6	30	Jogging	65%
7	30-35	Jogging	60-65%
8	35	Game	-
9	35-40	Jogging	65-70%
10	40	Jogging	70%
11	40-45	Jogging	75%
12	45	Jogging	80%

To evaluate the effects of the program on the subjects and find out about the difference between the two groups of test and control, all the statistical tests were done and analyzed using SPSS software.

3. Results

The calculated statistical data for social maturity and its triple dimensions are given in the Table 2. These data include the number of subjects, standard deviation, and mean achieved for each group of data before and after the program. As is clear the number of the subjects in each group was 30 ones.

Table 2: Statistical descriptives for social maturity and its triple dimensions in study groups

		<i>(Mean±SD)</i>				
Groups	N	Personal Competence	Interpersonal Competence	Social Competence	Social maturity	
Control	Pre-test	30	26.20±4.93	28.40±2.66	24.26±2.57	78.86±6.81
	Post-test	30	25.96±4.64	28.03±2.63	24.00±2.61	78.00±6.71
Test	Pre-test	30	25.93±2.97	28.43±2.04	25.60±2.9	79.96±3.83
	Post-test	30	29.20±1.84	29.90±2.12	27.00±2.39	86.10±4.75

The results of covariance (Table 3) show that there was no significant difference in the personal competence between the test and control groups before the exercise program, but after the program there appeared a meaningful difference between the groups ($p=0.001$). The results from the T test also affirm these findings, and show that the test group has received a significant increase in their personal competence after the course.

Table 3: Results of covariance for personal competence in two groups

	<i>Personal competence</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Pre-test	Between Groups	1.067	1	1.067	.064	.801
	Within Groups	962.667	58	16.598		
	Total	963.733	59			
Post-test	Between Groups	156.817	1	156.817	12.567	.001
	Within Groups	723.767	58	12.479		
	Total	880.583	59			

In table 4 the result of interpersonal competence are presented which show the effects of exercise on the increase of interpersonal competence level, that is, such figures in the test group, at the end of the program, and in comparison with those of the control group before and after the program show a meaningful difference ($p=0.004$).

Table 4: Results of covariance for interpersonal competence in two groups

<i>Interpersonal competence</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Pre-test	Between Groups	1.667	1	1.667	.003	.957
	Within Groups	326.567	58	5.630		
	Total	326.583	59			
Post-test	Between Groups	52.267	1	52.267	9.140	.004
	Within Groups	331.667	58	5.718		
	Total	383.933	59			

Table 5 presents the figures for social competence among different groups of the research. As can be seen, these figures for both test and control groups are slightly different but the difference is not meaningful before the program ($p=0.060$). Here also, as in other cases, the effect of taking exercise is tangible, that is, we observe an increase in social competence in the test group after the program, ($p=0.000$).

It is notable that a difference there appears between the test and control groups in social competence after the program.

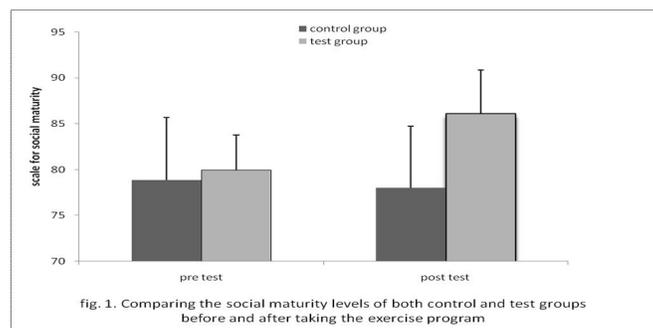
Table 5: Results of covariance for social competence in two groups

<i>Social competence</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Pre-test	Between Groups	26.667	1	26.667	3.691	.060
	Within Groups	419.067	58	7.225		
	Total	445.733	59			
Post-test	Between Groups	135.000	1	135.000	21.511	.000
	Within Groups	364.000	58	6.276		
	Total	499.000	59			

Results from analyzing covariance are given in Table 6 below. As we can see (see also Figure 1), the exercise plan has had a meaningful effect on increasing the students' social maturity ($p=0.000$).

Table 6: Results of covariance for social maturity in two groups

<i>Social maturity</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Pre-test	Between Groups	18.150	1	18.150	0.593	.444
	Within Groups	1774.433	58	30.594		
	Total	1792.583	59			
Post-test	Between Groups	984.150	1	984.150	29.083	.000
	Within Groups	1962.700	58	33.840		
	Total	2964.850	59			



4. Discussions

As we see from the results, the figures for social maturity and its triple dimension have not greatly changed before and after the exercise program in the control group. But those of test group showed a great difference before and after the test. This difference was statistically meaningful. Also, before taking the test, there was no meaningful difference between the control and test groups regarding their social maturity; but after conducting this study there appeared a meaningful difference between them in their social maturity and its triple dimensions. This means that the aerobic program has had a positive effect on increasing the level of subjects' social maturity in the test group. This finding is compatible with previous studies. In a word, related studies have also pointed out this. Among such studies is Vaez-Moosavi (2001) who observed in his study that features like physical health, sociability, philanthropy, creative conduct, and job satisfaction were better developed in athletes than in non-athlete individuals. Additionally, Bloorchian (1992) concluded that sport and recreational trips have a positive impact on people's sense of responsibility, health, cooperation, self-confidence and being charitable.

Also, Brown (1967) has proved that those taking exercise had more developed social maturity than those not taking such courses. Heckel and co-workers (1977) observed in their study that sports could help people be more cooperative, increase their capacities and avoid selfishness and being domineering. Behar & Stephens (1978) in their studies found that people's relations and family relations could get better by taking exercise and such people had not shown criminal tendencies. Furthermore, Schoberberger et al. (1981) in Germany found out that sport could greatly increase people's independence and positive sense of self-confidence. It also changed, somehow, their consideration of sickness and some other mental variables. Vyhnalek & Vavrova (1990), conducting a study in Czech, concluded that taking exercise caused a better understanding of one's personality, improvement of independence, better adaptability with illness and increase of self-confidence in the patients. Ewing (1997) showed in his study that parents could cause their children's social growth by providing them with sporting opportunities. Instructors can help subjects' social growth by giving them positive feedback. Besides, by giving good instruction, using encouraging speech, and having a logical viewpoint in correcting errors, teachers can ensure children's continuation of exercise and training. In addition to increasing social qualification, taking exercise can lead to the growth of other forms of self-confidence among the youth.

Based on the present study and those of others aforementioned we can conclude that sport and exercise programs have telling effects on mental and physical health, self-confidence and social maturity. Consequently, the exercise program used in the study has successfully increased the social maturity level of the male student. Also, in the three dimensions of social maturity, exercise has been meaningfully effective. In general, the results achieved from this study proved that the 12-week exercise program has had a tangible effect on the social maturity and its triple dimensions (social competence, personal competence, interpersonal competence) of the students in the test group as compared to those of the control group. As closing remark, the present research findings suggest that systematic exercise programs may actually enhance the development of social maturity which is of critical importance for coping with challenges encountered both in academic period and throughout the lifespan. A glance at the studies conducted in this field proves that their results are in agreement of those of this study.

As for the future, it is suggested that this study is comparatively performed by gender. For better generalization, it is advised that such studies are applied for larger scale populations.

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