

Research Article

INVESTIGATION OF EXTRINSIC MOTIVATION EFFECT ON SOME PHYSICAL FITNESS FACTORS OF FIRST GRADE HIGH SCHOOL GIRL STUDENTS IN AHWAZ CITY, IRAN

***Parissa Bahreinejad and Zeinab Yousefvand**

Department of Physical Education and Sports Sciences

**Author for Correspondence*

ABSTRACT

The purpose of this study was to examine the effect of extrinsic motivation (reward) on some physical fitness factors of first-grade high school girl students in Ahwaz city. The sample of this study was 120 girl students which were assigned in four experimental groups (15 individuals in each group) and four control groups were chosen (15 individuals in each group) randomly, with respect to the physical fitness tests. Some tests were used to measure the physical fitness of students comprised the 4*9 run test (agility measuring), the 540 meter run (cardio respiratory endurance), the sit and reach test (waist and hamstring flexibility measuring) and the sit-up (abdomen muscular endurance measuring). First of all, a pre-test was taken from participants and just before performing the post-test, extrinsic motivation (reward) was given to the test groups as a motivational factor. Obtained results using descriptive findings including mean, standard deviation, minimum and maximum score and illative findings from the Mann-Whitney test and the T- test with two dependent samples (paired samples T-test) demonstrated that extrinsic motivation could significantly affect on cardio respiratory endurance, agility, muscular endurance and flexibility and totally on physical fitness of girl students. As well as, there were significant difference between cardio respiratory endurance, agility, muscular endurance, flexibility and totally physical fitness of the students who received extrinsic motivation and those who did not.

Keywords: *Extrinsic Motivation, Pupils, Physical Fitness*

INTRODUCTION

One characteristic of humans' life is the movement which includes the physical and mental health and growth. Humans are forced to move for the survival. The humans prohibiting from movement, besides growth stunting, causes depression, abnormal behaviors and loss of vitality. Quoting from the inactivity book (illness, lack of movement) written by Krause and Raab, physical inactivity were known as a major factor in the development of heart disease and other spoiler diseases (Sharkey, 1995). In modern societies, lifestyle has changed in a manner that enhances the relative importance of this risk factor among many other risk factors such as smoking and hyper lipidemia (Farajzadeh-mavalou, 2002). In other words, physical activity is one of the best tools to achieve health and a productive life (Sharkey, 1995).

As for the rule of sport and physical activity in physical, emotional, psychological and social development and so on, sport extension at schools is one of the most important goals of education systems in the world; so that, students maintain their sport lifestyle after graduation and exercise some hours in a week. Thus, physical education classes of schools are an appropriate motivation for continuing this activity in adulthood to higher education. Sallis and McKenzie (1991) believed that positive experiences in physical education could have a positive impression on children and cause them to adopt an active lifestyle in adulthood which results in public health improvement. Therefore, it become important to recognition of motivational, cognitive and stimulator processes and the issue can be found out is whether children contemplate the physical education as a worthwhile, enjoyable and awarding experience or worthless and boring. According to researches performed in our country, girl students have had fewer physical activities than boys in and out of the school. As it is seen in developed countries, in our country is slightly more pronounced (Mojtahedi, 1998).

Nowadays, psychology is converted to a new science due to the great changes that have been achieved it and this caused people to have limited understanding of it, so, don't know much about its effective

Research Article

applications and remarkable effects despite its wide range of areas (Waez-mousavi, 2000). Motivation and excitement is one of the most interesting topics in psychology that is directly related to daily life. Rahmani-nia (2003) said by the definition of Alderman: motivation is readiness to select and direct the behavior that is associated with the outcome, controlled behavior and stability of behavior continuing until finally reaching the goal. One of the cases concerned in sports sciences is the relationship between motivation and learning and implementing sports skills. This may be due to the frequent reports that some of the teachers and the students have been attributed their success and failures to the motivation. Motivation is defined in terms of culture and context of "incitement to perform an action from the rest status". Most of the psychological theories of motivation have raised two different types of motivation: intrinsic motivation and extrinsic motivation. Deci and Ryan (1985) have proposed individual differences in case that some people have intrinsic motivation directed to the self-supporting – autonomy aspects of their works and others with extrinsic motivation directed to controlling aspects of their works. Learning can earn during task performing by waiting for trivial extrinsic reward as medal winning and promotions and intrinsic reward like the satisfaction of intellectual curiosity which in any case, motivation may cause learning (Alison *et al.*, 2006).

From the standpoint of neuromuscular can be noted that any external stimuli, that increase arousal, result in increase neuronal fireworks in the early centers of motion (primary motor cortex) and increase in workload through muscular contractions stronger during physical activity even in fatigue (Shepherd, 2001).

Nevertheless, the number of scientists such as Deci and Ryan (1991) believed that extrinsic rewards undermine the self-determination sense and freedom of choice of students. In another study, Deci *et al.*, (1999, 2001) and also, Hulleman *et al.*, (2007) believed that extrinsic rewards have fixed negative effects on intrinsic motivation. Van *et al.*, (1998) had found that all the students involved in research, have reported gaining a better score (extrinsic reward) in the course as their superior motivation. However, extrinsic motivation provides information based on their impact if even for students who are motivated internally, the extrinsic rewards (grades) may be valuable. As, Edward (1980) stated that usually extrinsic motivation in the classroom is the essential role and such awards increase the internal interests of classroom activities. However, children exercise motivationally, most of the people exercise for profitable reasons (pleasing an instructor and getting scholarship) quite often. Psychological and physiological changes made during the high school may provide a high-risk period for girls in order to accommodate themselves to the inactivity habits (Rowland, 1999). Therefore, physical education factors should be an important factor to improve the physical activity of girls. In this regard, the Ministry of Education has provided measures to involve physical fitness factors such as cardiorespiratory endurance, muscular endurance, agility, flexibility and muscular strength and also motor skills, in a two hour course of physical education. One of the important health benefits of physical fitness is to increase the ability of fat burning. Because it has been evident that physical fitness enhances consumable calories, fat calling, fat metabolism and net body tissue. Muscular strength and endurance are important factors of health and physical fitness, for daily activities, maintaining functional independence (especially during caducity) and participating in leisure time activities without undue fatigue, it is required desired level of muscular tautness. Another component of tautness related to health is flexibility. Certainly, the ability to move in a smooth motion over the full range of movement is essential for a healthy life. The specialists and experts in sports and fitness, altogether agreed that good flexibility is necessary the successful operation of the body. Although, many variables contribute to education, but the most important factor is the interaction occurred between teacher and student. Meanwhile, the role of physical education teachers is momentous in the process of education, growth and prosperity of all human dimensions and to realize the goals of the educational system. However, motivating the students by the sports teachers is serious to create an active healthy lifestyle and protecting the health of future mothers in Islamic society. Use of healthy competition to emerge talents and flourish creativity and abilities of individuals has the utmost importance (Kashef, 1990). Creating a sense of competitiveness in the students can help them to grow the potential of their motivation and ultimately reach their goals. Now, the main issue that arises is whether awarding to the

Research Article

students can affect the results of the tests containing muscular strength and endurance, agility, flexibility and cardiorespiratory endurance? And is there any difference in terms of physical fitness between the students who have received the motivation and someone without any extrinsic motivation. In this study, it had tried to gain applied results by accessing the above questions.

MATERIALS AND METHODS

Research Methodology

The research method was experimental and the type was field and valid physical fitness tests were used to collect data. At present research, the population consisted of all girl students in the first grade of high school in Ahwaz city who were being studying at public schools in 2013-14 academic year (N=23064). The sample for this study contained 120 girl students in the first grade of high school in Ahwaz city that were selected randomly from the two public high schools. Each high school had 12 classes and subjects were randomly replaced by four experimental groups and four control groups (15 persons in each group and in one of the physical fitness tests). To prevent interference with the groups' results, experimental groups were selected from one high school and control groups from the other. The posttest was performed in the control group without extrinsic motivation while, in the experimental group, extrinsic motivation was presented before the implementation of posttest. To promise providing reward was used as a motivation for participants who had a better record than others in their test groups and the prizes were awarded to the first to third members respect to their interest. Any student who was able to obtain the best record in the group, received a labeled card and by presenting it to the "Taraz" sports shop could buy a sports apparel up to a certain amount and in order to their self-interest.

Table 1: Descriptive statistical indices of all physical fitness factors for experimental and control groups in the pre-test and post-test and their differences (post-test – pre-test)

Groups in the pre test and post test and their differences (post test - pre test)											
Groups		Muscular endurance		Cardiorespiratory endurance		Flexibility		Agility		Total physical fitness	
		Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Control	Mean	25.33	19.67	2.76	2.88	20.26	23.67	12.10	12.7	-0.65	-0.12
	Standard deviation	7.24	7.87	0.43	0.45	11.35	11.62	0.75	0.95	2.30	2.81
	Minimum score	13	4	2.30	2.32	8	6	10.78	11.31	3.93	-5.73
	Maximum score	36	32	3.40	3.45	44	44	13.25	14.37	3.36	5.29
	Mean	20.73	23.6	3.17	2.51	26.4	27.93	13.09	12.44	0.12	0.65
Experimental	Standard deviation	5.05	6.02	0.39	0.31	8.05	8.64	0.83	0.58	1.69	1.94
	Minimum score	10	10	2.33	2.16	19	18	12.12	11.5	-2.17	-3.75
	Maximum score	31	33	4.01	3.09	42	44	14.53	13.56	2.73	3.03

The independent variable was extrinsic motivation and same physical fitness factors such as cardiorespiratory endurance, flexibility, muscular endurance and agility were dependent variables in this research, in which the reliability and validity of each of physical fitness tests are acceptable and logical (Safrit, 1990; Gartner & Jackson, 1994). In the present study, by using medical records of subjects which

Research Article

was collected at the beginning of each academic year by the respected physical education teachers, ensured the health of the studied students and students with physical problems and diseases were excluded. Afterward, in the standard field method, physical fitness variables in the sample were measured as a pretest and posttest. The descriptive statistics of research included statistical parameters such as mean, median, standard deviation, maximum and a minimum score.

Regarding to the data analyzed in Table 1, the mean, standard deviation, minimum and maximum scores for the test samples in the post-test toward pre-test demonstrated the quantitative progress of scores.

In order to test the hypotheses, Mann-Whitney test was used (due to the low sample size) and t-test with two dependent samples (paired t-test). Also, to interpret the tests, Z statistic had exploited and compared with table contents (Z_{α}) or calculated P-Value by SPSS software for statistical significance test. If the P-Value had been more than desired error level α , the difference wouldn't be significant and H_0 hypothesis would not be rejected. In the similar way, if the P-Value was less than desired error level α , the difference would be significant and it would be rejected the H_0 hypothesis. Now hypotheses can be tested:

About hypotheses mentioned that there was difference of agility, cardiorespiratory endurance, flexibility, muscular endurance and total physical fitness factors between girl students who received extrinsic motivation and those who did not, by using Mann-Whitney test for independent groups to compare mean differences (post-test – pre-test) of agility, cardiorespiratory endurance, flexibility, muscular endurance and total physical fitness factors scores, it has been concluded that there is difference between students receiving extrinsic motivation and those who didn't receive the motivation (Table 2).

There is no significant difference in the pre-test and post-test means of related test of a group	H_0
There is significant difference in the pre-test and post-test means of related test of a group	H_1

Table 2: The Mann-Whitney test results for independent groups to compare mean of the difference (pretest - posttest) of score agility, cardiorespiratory endurance, flexibility, muscular endurance and physical fitness factors series for experimental and control groups

Variable	Group	Count	Rating average	The total rating	Mann-Whitney statistic	Z	P significant level
Agility	Experimental	15	22.47	337	8	-4.335	0.000*
	Control	15	8.53	128			
Cardiorespiratory endurance	Experimental	15	22	330	15	-4.045	0.000*
	Control	15	9	135			
Muscular endurance	Experimental	15	9.73	146	26	-3.597	0.000*
	Control	15	21.27	319			
Flexibility	Experimental	15	9.97	149.50	29.5	-3.464	0.001*
	Control	15	21.03	315.50			
Physical fitness factors	Experimental	15	54.33	3260	1430	-1.943	0.032*
	Control	15	66.67	4000			

About other hypotheses suggested that the extrinsic motivation affects on agility, cardio respiratory endurance, flexibility, muscular endurance and physical fitness factors of girl students. The t-test with two dependent samples (paired samples t-test) has used for 30 specimens sample and it has been concluded that extrinsic motivation has a positive effect on the agility, cardiorespiratory endurance, flexibility, muscular endurance and physical fitness factors of girl students. Thus, the hypothesis was confirmed.

Research Article

Table 3: The dependent T-test results to compare the agility mean of students in pre-test and post-test

Variable	Group	Average	Standard deviation	The means difference	Degree of freedom	t	P Significant level
Agility	Pre-test	13.5987	0.92713	1.029	29	5.186	0.004
	Post-test	12.5697	0.78391				
Cardio-respiratory endurance	Pre-test	2.9653	0.15151	0.27267	29	2.742	0.010
	Post-test	2.6927	0.42546				
Muscular endurance	Pre-test	21.3000	6.56261	-1.73333	29	-4.502	0.004
	Post-test	23.0333	7.08154				
flexibility	Pre-test	27.30	9.67	1.50	29	3.847	0.005
	Post-test	25.80	10.29				
Physical fitness factors	Pre-test	16.5243	10.88404	0.93375	119	2.928	0.016
	Post-test	15.5906	10.81530				

Discussion, Evaluation and Conclusion

Based on findings of this study, among girls students who received extrinsic motivation and who didn't receive, there was a significant difference at the probability level of $P \geq 0.05$ in terms of agility, flexibility, cardiorespiratory endurance and muscular endurance, which referring to ability of the sports rewards as extrinsic motivation in students' willingly to physical activity.

In this regard, research results of Shafi-zade (2000), Hasanian (2000), Robert *et al.*, (2007), Torabi *et al.*, (2009), Torabi *et al.*, (2013), Chang (2003), Lazer (2000), Van *et al.*, (1998), Gibonz (1997), Cameron and Pears (1994), Pelletier *et al.*, (1995) were consistent with the results of this research and were incongruent with the results of Hulleman *et al.*, (2007), Orthis *et al.*, (2007), Deci *et al.*, (1999) and Isenbarger and Kameron (1996). The reason for this paradox can be due to high school students' understanding of the physical activity versus understanding of those who passed this level and did sports activities with a special interest. Statistically significant differences in the samples of this study can be attributed to similar age group of subjects, the same emotional needs and approximate balance of the environment, culture and economy of the family. It seemed that students did the requested behavior in order to obtain a reward as an incentive or external consequence; it meant that extrinsic motivation is an environmental reason to start and continue a practice. Thereupon, people of identical, uniform and same types in terms of all the psychological and physiological aspects, had almost the same behavior. Students did sports more likely to receive both bonuses, intrinsic and extrinsic. The importance of these two factors greatedened by each student is different and is due to individual differences, that is probably the main reason for the lack of interest in the exercise of some students. It should bear in mind that the amount and level of extrinsic motivation to a small number of students had not the favorable effect and has not encouraged them to exercise, so, their dormant inner tend has not affected or the influence has been negative. Hence, it can be mentioned that extrinsic events such as rewards create somewhat extrinsic motivation which make dependence of "means for target" in the mind.

Research Article

According to the results of this study, it was found that extrinsic motivation affected on agility, flexibility, cardiorespiratory endurance and muscular endurance. As Shafi-zadeh (2000) reported, there were no significant difference in male physical educators on mentioned factors with respect to intervention of motivation, but the acquisition of authority by the physical education teachers of second age group was due to superior motivation condition than the other groups. In the study of elite cyclist athletes performed by Hulleman *et al.*, (2007), it was concluded that extrinsic motivation doesn't change sports runtime in sports timed tests and the implementation of 1500 meters running are extremely stable and cannot be changed easily with extrinsic motivation. These findings were not consistent with results of the present study. This incompatibility could be due to differences in age level, cultural and economic conditions but, the causal viewpoint of daily behavior indicated the fact that needs are off sometimes, or at least somewhere in the corner of consciousness. Sometimes students were bored at school and do not show interest in their curricula. These observations suggested that people do not always make their motivation within themselves; rather, they would be passive and waiting for the environment to supply their motivation. Teachers noticed the lack of extrinsic motivation at schools and in response, use the scores, decals, admiration, and points of the more break time to motivate their students. Various researches in the field of motivation indicate the necessity of its use to advance the goals. Most of the studies showed the effectiveness of extrinsic motivation in order to optimal learning. Numerous studies have also pointed to the negative effects of this motivation type and in the other studies, it was known to be effective the use of this type of motivation to internalize the task and inform the person. In a number of other studies, there was no significant relationship between the physical fitness factors of extrinsic motivation.

Regarding to the results of various studies, the need for such studies to evaluate the students' motivation and create them the tendency of exercise and ultimately improve the quality of health and hygiene in young people of this country felt by the coaches, sports psychologists and researchers.

REFERENCES

- Alison RA, Thangavel A, Whitfield GS, Knutson B and Gabrieli DE (2006).** Reward- motivated learning mesolimbic activation. *Precedes Memory Formation* **50**(3) 507- 512 .
- Cameron J and Pierce WD (1994).** Reinforcement, reward, and intrinsic motivation, A meta analysis. *Review of Educational Research* **64**(5) 363-423.
- Chang E (2003).** Composite effects of extrinsic motivation on work effort: case of Korean Employees. *Journal of World Business* **38**(1) 70-79.
- Deci EL and Ryan RM (1985).** *Intrinsic Motivation and Self-determination in Human Behavior* (New York: Plenum Press).
- Deci EL, Koestner R and Ryan RM (2001).** Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Educational Research* **71** 1-27.
- Deci EL and Ryan RM (1991).** A motivational approach to self. Integration in personality. In: *Nebraska Symposium on Motivation: Perspective on Motivation*, edited by Dienstbier R (Lincoln, NE: University of Nebraska Press) **38** 237-288.
- Deci EL, Koestner R and Ryan RM (1999).** A meta- analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin* **125** 627-668.
- Edward AW and Robert LW (1980).** Effects of extrinsic rewards on intrinsic motivation in the classroom. *Journal of School Psychology* **18**(2) 141-147.
- Farajzadeh-Mavalou Sh (2002).** Research in medicine. *Research Journal of Medical Faculty*, year 26 (3).
- Gartner BT and Jackson A (1994).** *The Evaluation and Measurement in Physical Education*, fifth edition (Tehran: Semat Publication) **1**(2).
- Gibbons R (1997).** Incentives and Careers in Organizations. In: *Advances in Economic Theory and Econometrics*, edited by Kreps D and Wallis K (Cambridge, U. K: Cambridge University Press) **2**.
- Hoseynian M (2000).** Comments on the motivational factors influencing the performance of teaching and research faculty in University of Medical Sciences. School of Nursing and Midwifery, University of Medical Sciences and Health Services - Health, Hamadan, M.Sc Thesis.

Research Article

- Hulleman M, Dekoning JJ, Hettinga FJ and Foster C (2007).** The effect of extrinsic motivation on cycle time trial performance. *Official Journal of the American College of Sports Medicine* 709-715.
- Hulleman M, Koning JJ, Hettinga FJ and Foster C (2007).** The Effect of extrinsic motivation on cycle time trial performance. *American College of Sports Medicine*, 0.1249/mss.0b013e31802eff36.
- Kashef M (1990).** Check the views of participants in the final stage of the competition, cultural and sports on how to run the race, Tehran, Research Unit of the Department of Physical Education, Ministry of Education.
- Lazer E (2000).** Performance, pay and productivity. *American Economic Review* 90(5) 1346-1361.
- Mojtahedi H (1998).** Studying and understanding the causes of male and female students across the country and reluctance to exercise approved plan in Ministry of Education, first edition. *Proceeding of Articles (6) on Physical Education and School Sport*.
- Ortis LC, Maymi JN, Feliu JC, Vidal JM, Romero EP, Bassets MP, Herreros MV and Borsa JV (2007).** Extrinsic motivation in university community members: A behavioural intervention. *Psychotrapy Magazine* 19(2) 250-255.
- Pelletier L, Fortier MS, Vallerand RJ, Tuson KM, Briere NM and Blais MR (1995).** Toward a new measure of intrinsic motivation, extrinsic motivation, and a motivation in sports: The Sport Motivation Scale(SMS). *Journal of Sport and Exercise Psychology* 17(3) 35-53.
- Rahmani-nia F (2003).** *Principles and Application of Movement Learning* (Tehran: Publication of Bamdad- e-Ketab).
- Roberts DP, Kathleen MC and Donald JC (2007).** Effects of extrinsic financial rewards on intrinsic motivation. *Journal of Applied Psychology* 62(1) 9-15.
- Rowland TW (1999).** Adolescence: A "risk factor" for physical inactivity. *President's Council on Physical Fitness and Sports Research Digest* 3 1-8.
- Safrit MJ (1990).** *Introduction to Measurement in Education and Exercise Science* 4-5.
- Sallis JF and McKenzie TL (1991).** Physical education's role in public health. *Research Quarterly for Exercise and Sport* 62 124- 137.
- Shafi-zade A (2000).** The relationship of motivation to investigate physical fitness, physical education on teachers and academic skills. Faculty of Physical Education, Tarbiat Modarres University, Tehran, M.Sc Thesis.
- Sharaki BJ (1995).** *Physiology of Fitness*, first edition, translated by Nikbakht M (Ahvaz Publication of Chamran University).
- Shephard RJ (2001).** Chronic fatigue syndrome: an update. *Sports Medicine* 31(3) 94-167 [rev. Article].
- Studies Deputy (1998).** *Proceedings of the First Congress of the Sports Schools*, Administration of Physical Education. Ministry of Education.
- Torabi F et al., (2013).** The effect of music on the implementation fitness factors of teenage boys. *Growth and Learning of Motor-sports* 11 39-53.
- Torabi F et al., (2009).** Comparison of the audience and the music and learn to run a single skill (basketball free throw). *Growth and Learning of Motor-sports* 1(3) 65.
- Van Etten S, Pressley M, Freebern G and Echevarria M (1998).** An interview study of college freshmen's beliefs about their academic motivation. *European Journal of Psychology and Education* 13(2) 105-130.
- Waez Mousavi SMK (2000).** Sport Psychology. Introduction to Physical Education degree, Ministry of Science, Research and technology, Great Persian Encyclopedia Foundation.