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# The Effect of A Ten-week Autonomy Practice on Autonomous Motivation and Willingness to Rely on Exercise

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**ABSTRACT**

**Background:** Internal motivation and autonomous external motivation are to some extent similar and both are opposed to non-autonomous external motivation. **Objectives:** The aim of the present study is to increase the efficiency of the physical education classes in further encouraging students to do physical activities outside school through determining the amount of the effect of autonomy-practice and non-autonomy-practice on autonomous motivation and perceived autonomy support in physical education. **Methods:** Participants in this study were students of two high schools (N=100; M=18.1±0.36) who were randomly placed in control and experimental groups. In the experimental group, the teacher taught students physical activities and the students had to perform them with desire and interest. But in the control group, physical activities were completely performed by the teacher and under his own supervision. The whole practice period was ten weeks. Two questionnaires, "sport motivation scale" (SMS) and "intention to partake in physical activity", were used. **Results:** The results showed that the effect of autonomy practice and non-autonomy practice on the linear combination of sport motivation and willingness is significant [F, (2, 95) =41.714, P=0.00]. They also showed that the effect of autonomy practice and non-autonomy practice on the linear combination of subscales of sport motivation was significant [F, (5, 89) =50.295, P=0.000]. Students of the experimental group showed a higher level of willingness and interest in physical education. **Conclusions:** Findings in this study are strong evidences indicating that both autonomous support and autonomous motivation are needed to maximize the effect of physical education classes.

**Key words:** Autonomy, Autonomous Motivation, Physical Activity, Physical Education, Self-determination Theory

## INTRODUCTION

Children who are physically active tend to have increased self-esteem, reduced levels of anxiety and depression, improved brain function, academic scores, and have better attendance rates at school (Adkins et al., 2017). Specifically within the United States, a report by the National Physical Activity Plan Alliance (NPAPA; 2016) found that only one-fourth of children are currently meeting physical activity demands. Due to this lack of physical activity, 75% of children are at an increased risk for future obesity, diabetes, and related chronic illness (NPAPA, 2016). Considering the fact that inactivity problems have entangled modern societies and this can have unwelcome consequences for the health of people, PE teachers should enhance students' motivation to continue taking part in physical activities outside school. One other factor related to PE is the amount of joy students experience while doing these activities (Dehghan et al., 2015). The chief impetus in kids and adolescents to do physical activities is the pleasure and joy they receive while doing them (Macphail et al., 2008; Gillison et al., 2013). We all believe that in athletic settings motivational prompts are the basis of success (Hossein& Richard, 2002; Leptokaridou et al., 2016). Motivation has to do with energy, guidance and perseverance (Deci & Ryan, 2012). One who lacks energy and a motive source to act fails to have motivation and is unmotivated. On the contrary, one who acts and is pushed forward to get a goal is motivated (Ryan &Deci, 2000b). Deci (1971), contrary to his previous motivation theories, maintained that there are cognitive aspects to motivation and believed prizes in the form of speech reinforcement and positive feedback are influential in creating higher levels of internal motivation. This led to the formation of the theory of Cognitive Assessment which is the basis of the Self-determination Theory (Deci& Ryan, 1985).

Ryan and Deci (2000) held that external motivation can be autonomous or non-autonomous. When one accepts external reasons to act in a certain field and makes them internal, the external motivation becomes autonomous and, accordingly, it becomes self-intentional. In contrast, non-autonomous external motivation refers to those acts imposed

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on someone by others. In other words, since main reasons to participate in those acts don't fully conform to the value system and feelings of an individual, and also because of the pressure dictated on the individual by internal forces such as shame and external forces such as the coach, there is a sense of pressure pushing the individual to do those acts. However, it should be noted that the individual's behavior is conscious and he never performs the activities which do not correspond with his value system (Mageaue &Vallerand, 2003).

Research shows that internal motivation and autonomous external motivation are to some extent similar and both are opposed to non-autonomous external motivation. Of course, external motivation is also necessary and important for optimal performance of athletes since engagement in exercise entails constant education and discipline which is not always pleasurable. So, athletes cannot always rely on internal motivation, and different forms of external motivation should also be taken into account, that is, they should accept the importance and value of education to increase their athletic skills (Mageaue&Vallerand, 2003). Autonomy is the need to self-follow, the sense to choose at the start, and the maintenance and setting of actions (Sheldon & Filak, 2008). One is autonomous when he independently chooses and targets his goal; when he chooses materials, methods and duties, chooses the right sort of practice relevant to the duty and target; and finally chooses criteria for evaluation (Cubukcu, 2016). In autonomy support style, one who has authority (teacher or coach) makes use of others' (students or athletes) ideas while minimizing using commands and coercion. He considers their feelings and provides them with appropriate information and choice chances (Almagro et al., 2010).

Feeling of autonomy while performing action leads to a special psychological state in which he thinks the outcomes are due to his own actions and they are not controlled by external environment. This psychological state also leads to the formation of internal motivation to do things (Kuvas, 2009). Autonomy motivation is relevant to behavioral, emotional and cognitive results (Ryan & Deci, 2000a). With regard to emotional results, it is supposed that when autonomy motivation is increased, positive feelings are promoted and negative emotional responses are decreased (Alvarez et al., 2009). It is also accompanied with behavioral results like feeling of pleasure, commitment to exercise, performance promotion, and fatigue reduction (Ryan & Deci, 2000a). As to PE and physical activities, there's a negative relationship between lack of motivation and participation in physical activities or willingness to participate in those activities (Lindley et al., 2012; Standage et al., 2003).

Gillison, et al. (2013) in a research on 592 students of guidance school investigated manipulating individuals' goals and motivations in PE classes and its effects on the individuals' next physical activity experiences and concluded that motivation has a significant relationship with the results related to the classroom including endeavor, pleasure and value. Sicilia, et al. (2016) in a research on 390 guidance school students found that three forms of autonomy motivation are correlated negatively with the inclination to do physical activities. Motivational atmosphere is a basic factor influencing individuals' motivation and refers to a social definition like classroom or sport team of desirable and undesirable behavior. Positive emotions like pleasure and being pleased to participate boost individual's propensity to keep acting. The kind of atmosphere the teacher or others, including teammates, provide can promote individuals' internal motivation (Ezzati et al., 2016). Teacher or coach behavior is a basic element affecting the needs and motivation of students and athletes in creating a motivational atmosphere (Amorose, 2007).

Leptokaridou, et al. (2016) investigated the effect of autonomy support education in PE classes on the amount of joy, fear of defeat, fatigue and endeavor. Findings showed that autonomy support education increased motivation levels, as opposed to no education of autonomy support which might lead to gradual decrease of participation in PE classes. Also, Yoo (2015) investigated whether autonomy motivation mediates the relationship between perceived autonomy support and behavior conflict in PE. Findings showed that autonomy motivation to some extent mediated the positive relationship between perceived autonomy support and behavior conflict. The findings indicated that consistent and comprehensive excitement in motivation procedures for understanding the quality of perceived autonomy support and behavior conflict in PE is of special significance.

The findings of the investigated researches show that based on the theory of self-determinism and the studies done by Rutten et al., 2013; cheon & Reeve, 2013; Gillison et al., 2013; Negovana & Bogdanb, 2013; Haerens et al., 2015; Yoo, 2015; Meyer et al., 2016; Sidsel et al., 2016; Cubukcu, 2016; Leptokaridou et al., 2016; Hien, 2016; Sicilia et al., 2016, it can be concluded that the use of self-autonomy in the classroom training programs had a positive relationship with the increase of self-autonomous motivational forms, and a negative relationship with non-autonomous motivational forms (external motivation and a-motivation). Of course, we face contradictory results in the studies done in this regard including Berghe et al (2013) who found that the academic behavior of teachers in support of students' self-autonomy has no effect on their motivation. Reviewing the research literature, we find that there have been few foreign researches regarding the effect of how to run the PE class on self-autonomy motivation and perceived self-autonomy support as well as the willingness to continue exercising. But, in our country, no study has been done in this regard. By adopting new education methods, teachers can increase children's willingness and desire towards PE classes. This desire and interest leads to organized physical activities outside schools, and an efficient step forward to improving children's inactivity is made. Since teachers play a great role in starting, doing and keeping physical activities on the part of students (Hosseini Nia et al., 2015), and considering the importance of exercising and the research literature relevant to it, unfortunately experts in the field have done just few studies about the effect of the way physical exercising (autonomy and non-autonomy in exercising) is done on autonomy motivation and perceived autonomy support in PE at schools. Because in the past the field of physical education has tried to be "all

things to all people," and now we don't know exactly what it stands for, we should, as physical activity educators, sharpen our image and improve the quality of our efforts by focusing primarily on developmental physical activity in sport ,exercise, and related expressive movement. As we sharpen our image, we should make a strong effort to include those who are working in the private agency and commercial sectors. This implies further that we will extend our efforts to promote the finest type of developmental physical activity for people of all ages whether they are members of what are considered to be "normal, accelerated, or special" populations (Zeigler, 2014). So, in the present study it is tried to investigate the effect of the way doing physical exercise, considering autonomy, has on motivation factors, and consequently, exercising in PE classrooms at schools, and whether ways of doing exercise could affect PE hours at school and the quality of their physical activities and exercising. I hope by scientifically answering the questions mentioned and proving the claim of the effect of physical activity ways on autonomy motivation and perceived autonomy support in PE, we could take a big step in improving students' physical activities and increasing the efficiency of PE classes in arousing students to do organized physical activities outside school and to continue doing them.

## METHODS

### Participants

Subjects in this study were male senior students of ordinary high schools in Kuhdasht, (Lorestan province, Iran) who were busy studying in the educational year 1394-95 and had no professional exercise activity. With regard to the goal of the research, samples of 100 people were chosen by using cluster sampling from among the related population. The selected sample consisted of four classes of third grade students with the average age of 18.1± 0.36 who were randomly placed in four classes; two as the control group, two others as the experimental group.

### Instruments Used in this Study

A form was used to get individual information such as age, field of study, exercise experience, having professional activities, long-term injury record, mental and physical illness record, partaking in a similar study at the same time, and the amount of familiarity with the current research. Also, with regard to the general purpose of the research, two questionnaires, "sport motivation scale" (SMS) and "intention to partake in physical activity", were used in which directing students' motivation, students' autonomy support, and willingness to rely on exercise were assessed respectively.

#### *Sport motivation scale questionnaire (SMS)*

Sport motivation scale questionnaire specifies the direction of students' motivation (Pelletier et al., 1995). This questionnaire has 28 questions and 5 subscales. Its cronbach's alpha and retest coefficient are 0.82 and 0.69, respectively (Zardoshtian et al., 2012). For construct validity, by using exploratory factor analysis, loads bigger than 30 have been considered significant. In analyzing main determinants, a five-factor style including internal motivation subscales, external motivation, introspective motivation, external motivation, and non-motivation were emphasized. Also, the congruency coefficient of its subscales was reported to be between 0.69 to 0.88, for all the scale, it was 0.76, and the reliability coefficient with retesting method within four weeks was reported to be 0.70 (Zardoshtian et al., 2012).

#### *Intention to take part in physical activity questionnaire*

Willingness to rely on exercise in next seasons and months was investigated by using Three Items based on the study done by Chatzisarantis, et al. in 1997. The scale of the intention to partake in the physical activity questionnaire was shown by the Licker's seven-value (7 very strongly, 1 very little). Standage, et al. (2003) showed an acceptable internal reliability in exercise. Ahmadi, et al. (2016) indicated 0.88 as the cronbach alpha coefficient for this questionnaire.

### Procedure

After getting letters of satisfaction from students and their parents to take part in the research process, I placed students to four classes; each class 25 students. Research sample consisted of a control group and an experimental group. To get the exact effect of treatment on the experimental group students and control the intervening variables, I chose the control group from one high school and experimental group from another high school. To do the research, I chose two PE teachers from the city to teach the PE lessons. One week before the research process, these teachers were invited to a justificatory session to get the necessary educational instructions. These instructions were about how to perform practice protocols in treating with the students of control and experimental groups. Practice protocols were exactly the same for the teaching sessions of both groups (These protocols exist in the headlines of PE lessons and also in the work books of PE teachers). The only difference was the way to perform practice protocols. In the experimental group, the teacher taught students physical activities and the students had to perform them with desire and interest. But in the control group, physical activities were completely performed by the teacher and under his own supervision. The whole practice period was ten weeks which was performed simultaneously with PE lessons at school. One week before the treatment (ten weeks practice), all the Participants answered questions the researcher designed to find out about issues like age, field of study, exercise experience, having professional activities, long-term injury record, mental and physical illness record, partaking in a similar study at the same time, and the amount of familiarity with the current research. Also, same and similar measures were done before and exactly after practice sessions were finished so that Participants answered the items in the two questionnaires, "sport motivation scale" (SMS) and "intention to partake in physical activity", one week before starting the ten-week practice period. Then they took part in

the ten-week practice period and at the end, answered the items in the questionnaires once again.

### Statistical Analysis

Students taking part in this research were of the average age 18.1 and had a standard deviation of 0.36. In the current study, after collecting data, kolmogoro test was used to make clear preconditions of the parametric statistics and Mirnov tests was used to see whether the data are normal. And finally, M Box test was used to investigate the equivalence of variance and covariance matrices (P=0.063). Linearity of correlation between research variables was also confirmed at the level of P<0.05 (Lawrence et al., 2006). As a whole, assessing the properties of data showed that basic presuppositions of the parametric statistics holds, and so the analysis can be done. To find out the effect of a ten-week practice of autonomy on sport motivation and willingness to rely on exercise, the Multivariate Analysis of covariance (MANCOVA) was used. Tests related to the inter-subjects effects were performed separately on each dependent variable so that the significant statistical source of the effect of multivariable (ANCOVA) is determined. Also, to find out the effect of ten weeks autonomy on subscales of sport motivation, Multivariate Analysis of covariance (MANCOVA) was used.

## RESULTS

In table 1, descriptive indicators of variable such as average, standard deviation, minimum and maximum grades are presented.

To find out the effect of a ten-week practice of autonomy on sport motivation and willingness to rely on exercise, the Multivariable Analysis of Variance was used. The Wilks Lambda indicator showed that the effect of autonomy practice and non-autonomy exercise on the linear combination of dependent variables (sport motivation and willingness to rely on exercise) is significant (F(2,95)=41.714; P<0.001). Tests related to inter-subjects effects were performed separately on each dependent variable so that the significant statistical source of the effect of multivariable is determined. As it is shown in table 2, autonomy practice and non-autonomy practice in exercise significantly affect sport motivation and willingness to rely on exercise (P<0.001).

**Table 1.** Descriptive indicators of variable such as average, standard deviation, minimum and maximum

| Variable | Autonomy in practice | | Non-autonomy in practice | |
|---|---|---|---|---|
| | Mean | SD | Mean | SD |
| Sport motivation | 129.4 | 12.7 | 144 | 9.5 |
| Internal motivation | 52.4 | 5 | 58 | 5.6 |
| Self-accepting external motivation | 20.4 | 3.6 | 24.7 | 3.2 |
| Internalized motivation | 19.6 | 3.4 | 24.4 | 3.5 |
| External motivation | 18.4 | 3.6 | 22.8 | 3.9 |
| a-motivation | 18.5 | 2.8 | 14 | 3.6 |
| Willingness to rely on exercise | 9.4 | 1.8 | 12.4 | 2.6 |

Also, to find out the effect of ten weeks autonomy on subscales of sport motivation, Multivariable Analysis of Variance was used. The Wilks Lambda indicator showed that the effect of autonomy practice and non-autonomy exercise on the linear combination of subscales of sport motivation (internal motivation, self-accepting external motivation, internalized motivation, external motivation, and a-motivation) was significant (F(5,89)=50.295;P<0.001). As it is shown in table 3, there is significant difference as to the two methods of autonomy and non-autonomy in exercise between control and experimental groups in all subscales of sport motivation. Except a-motivation factor which is more in the control group than in the experimental group, in other sport motivation factors, the experimental group has a more average compared to the control group.

## DISCUSSION

Sport motivation is one of the most important subjects in exercise psychology since it is related to the issue of continuing or leaving exercise. One of the most outstanding motivation theories is the autonomy motivation theory which has a wide application in exercise. Different factors are influential in PE at schools. One of these factors is the importance of the useful relationship between teacher and students, and the quality of this relationship is an important determinant factor in creating motivation, promoting performance, and the commitment of athletes (Ahmadi et al., 2014). Hence, in this study, based on the framework of autonomy theory, the effect of autonomy support behaviors on autonomy motivation and the amount of students' satisfaction of PE classroom hours and encouraging them to do exercise activities have been investigated.

The results of this study showed that the ten-week autonomy practice has a significant effect on the students' sport motivation, being congruent with the results of researches done by Negovana and Bogdanb (2013); Meyer et al. (2015); McDavid et al. (2012); Alvarez et al. (2016) and Yoo (2015). Examples of sameness and similar work procedures are among the reasons for this congruity. The result here is incongruent with the results of the researches done by Berghe et al. (2013). One of the reasons for this incongruity is the different subjects participating, that is, university students.

All the factors including motivation try to encourage the individual to keep doing physical activities and exercise outside school to see its effects on the individual's other physical and mental aspects. Results of this study showed that doing ten weeks autonomy practice has a significant and positive effect on students' willingness and desire to do physical activities and exercise which is consonant with the results of the study done by Stormoen et al. (2016); Meyer et al. (2015) and Lindley et al. (2012). Sameness of the students' sample and sameness of their ages are among the

**Table 2.** Results of MANCOVA on general variables research among groups

| Source | Wilks' Lambda | F | Hypothesis df | Error df | P value | η2 |
|---|---|---|---|---|---|---|
| Group | 0.532 | 41.714 | 2 | 95 | <0.001 | 0.468 |

**Table 3.** Results of ANCOVA on variance for all subscales of sport motivation variables among groups

| Source | Dependent variable | Type III sum of squares | df | Mean square | F | P value | η2 |
|---|---|---|---|---|---|---|---|
| Group | Internal motivation | 792.84 | 1 | 792.84 | 30.32 | <0.001 | 0.246 |
| | Self-accepting external motivation | 285.08 | 1 | 285.08 | 39.21 | <0.001 | 0.297 |
| | Internalized motivation | 418.79 | 1 | 418.79 | 49.35 | <0.001 | 0.347 |
| | External motivation | 302.84 | 1 | 302.84 | 30.38 | <0.001 | 0.246 |
| | a-motivation | 615.04 | 1 | 615.04 | 153.62 | <0.001 | 0.623 |

reasons for this consonance. But results of this study were not congruent with Shen's research (2014). The reasons for this incongruency perhaps lie in the relationship between organized activities outside school and autonomy practice in PE lessons at school.

Results of the study show that a ten-week autonomy practice has a significant effect on sport motivational subscales. These subscales are internal motivation, self-accepting external motivation, internalized motivation, external motivation, and a-motivation. These results are congruent with the researches done by Meyer et al. (2015); Lindley et al. (2012) and Alvarez et al. (2016). Studies showed that internal motivation and autonomous external motivation are to some extent similar to each other and both are opposed to non-autonomous external motivation. Of course, external motivation is an important element for the optimal performance of athletes because being busy in exercise entails continuous education and discipline which is not always pleasurable. The mental skill training such as imagery, goal setting, self-talk, and relaxation as internal motivation are needed for skill acquisition training among athletes (Sadeghi et al., 2010). So, athletes cannot always rely on internal motivation, and it is necessary that all other kinds of external motivation be taken into account, meaning that for improving their skills in exercise, they should accept the importance and value of education (Sheldon & Filak, 2008). These findings indicate that consistent and comprehensive excitement is of special importance for understanding the quality of perceived autonomy support relationship and behavioral conflict in PE. With regard to the fact that autonomous motivation leads to the increase of passion and interest in activity and facilitates life satisfaction and prevents negative emotions (Curran et al., 2011), it can be stated that teachers and coaches are successful in creating different forms of autonomous motivation in students when they use autonomy support behaviors to help students have motivation and persuade them towards classroom PE lessons and exercise activities, and also when they support learning and interests like listening, creating choice opportunities, providing information feedback, and answering questions. Making such an environment leads to positive behavioral, emotional and cognitive results in students. It can make students attend physical activities outside school and, accordingly, enjoy a healthy body.

An individual is autonomous when he independently chooses and targets his goal and destination; he chooses his materials, methods, and duties, he chooses the kind of practice relevant to his goals and obligations, and finally he chooses the right criteria for assessment (Almagro et al., 2010). Due to the fact that self-autonomy practice has a meaningful effect on students' athletic motivation, teachers are suggested to, as far as possible, use the method of self-autonomy in exercising to perform training protocols in PE classes at schools to reach the optimal performance in the classroom. It is also suggested that this study be done on boys and girls in different educational levels and compare the results obtained.

## CONCLUSION

Based on the results of the study, it is suggested that the use of autonomy method in practice and giving initiative to students in most times of the PE classes make students enjoy more from these hours and be incited to go to organized physical activity classes outside school to enjoy a healthier life. This relationship with peers in these classes outside school has a very positive effect both for their physical health and also their mental health. As a general conclusion, it should be confessed that the existence of contradictory results and relationships indicates the point that in PE the principle of individual differences in education and learning should be fully considered. In learning, special attention should be paid to students' individual characteristics and the environment in which they are to achieve utmost efficiency and output. In addition to generalizing the results of this study to teachers and students, the findings of this study can also have many educational applications including designing career duties of teachers in terms of their treatment with students and their educating them to result in utmost pleasure and efficiency from PE lessons and consequently to lead them to physical activities outside school.

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