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INVESTIGATION OF EXERCISE DEPENDENCY ATTITUDE IN CYCLISTS

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ABSTRACT

Aims: The aim of this study is to determine the relation between exercise dependency, exercise dependency frequency and sportive habits correspondent to cycling.

Methods: There were 165 voluntary participants between the ages of 18 and 62. They have filled out Exercise Dependency Scale-21 and by dint of the scale they have been categorized into 3 following groups: "Dependent", "Non Dependent Symptomatic" and "Non Dependent Asymptomatic". The participants' medical conditions and traits of cycling were determined by an evaluation form and compared in between the groups. For the data acquired, Kruskal Wallis test was used for the comparison in between the groups; Mann-Whitney-U test was used to compare the data of two groups. This study was approved by the local ethics board.

Results: When the data analyzed with Exercise Dependency Scale-21, it was determined that there were 9 (5.5%) people who were "dependent", 107 (67.8%) people who were "non dependent symptomatic" and 49 (29.7%) people who were "non dependent asymptomatic". The weekly cycling time in the last year was found more in the dependent (19.6±15.5) group and the symptomatic (11.6±11.1) group than the asymptomatic (7.8±7.4) group (respectively p=0.017 and p=0.015). Weekly cycling frequency was found more both in the dependent (6.8±3.6) group and the symptomatic (5.9±12.5) group than the asymptomatic (3.5±3.3) group (respectively p=0.005 ve p=0.044). Furthermore the last year's weekly cycling frequency of dependent group was higher than the symptomatic group (p=0.0016). In this study, there is no significant difference depending on the consumption of alcohol and cigarettes.

Conclusion: In this study, exercise dependency of the cyclists is determined to be 5.5%. According to the Exercise Dependency Scale-21, the weekly exercise duration and frequency of the dependent group were higher than the symptomatic and the asymptomatic groups. Therefore, consumption of alcohol and cigarettes by the groups were similar, thus exercise dependency is not coherent with the consumption of alcohol and cigarettes.

Keywords: Sports, exercise, dependency

INTRODUCTION

Exercise dependency, is a type of attitude that people have the urge to do exercise nevertheless their exercise periods are extended uncontrollably or the conditions of their exercise is very severe (1, 2). The term, Exercise Dependency, does not take place in The Diagnostic and Statistical Manual of Mental Disorders (DSM). However, dependencies in the DSM are defined according to some criteria and exercise dependency shows some similarities to these criterias. Some of the following factors which are used to determine exercise dependency criteria are exercise duration, increase in exercise frequency and severity, lack of social time because of exercise, becoming distant to social activities and organizing daily life pursuant to exercise routine (3, 4). In this context, subject's social life and welfare can be affected. Injuries and socializing problems can be seen.

Prior to a study, people who has been diagnosed with exercise dependency attitudes show different psychopathological properties (5). For example, subject's

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consumption of alcohol and cigarettes or eating habits was found similar to other groups. However, some of the studies have shown that exercise dependency could change by factors such as age, gender, educational status, exercise duration and exercise frequency (3, 5, 6, 7). In terms of exercise dependency, different results can be seen in different sports. For example, exercise dependency in bodybuilders is seen more than the other athletes (3). Cycling is a sportive branch and a physical activity that all age groups could do as hobby, transport, sports and so. In this branch of sports, aerobic capacity is used significantly and also articulations are working actively against to a certain load. Besides that, non sufficient precautions could cause trauma.

The goal of this study is to classify cyclists' exercise dependency frequency by Exercise Dependence Scale-21 (EDS-21) into three groups: "dependent", "non dependent symptomatic" and "non dependent asymptomatic" and compare sportive habits which are specific to cycling in between the determined groups.

MATERIAL AND METHODS

There are 165 voluntary subjects between the ages of 18-62 who use bicycle for different purposes. Filling out cyclist evaluation form and EDS-21 was demanded from the participants. Local ethics board approval was taken for this study.

Cyclist Evaluation Form:

In this study "Cyclist Evaluation Form" was generated for the participants and filled out by using "Trakya University E-Survey System". Alongside consumption of alcohol and cigarettes, educational status, height, age, weight, body mass index (BMI), gender, medicaments in use and physical-emotional nuisances; questions like the purpose of using a bicycle, duration and frequency of cycling training, the age of start to cycling, driving safety and being licensed or not was asked in the form. Furthermore, the participants were asked whether they are doing any additional sports and having any physical nuisance or chronic disease in order to analyze the sportive features of the participants.

Exercise Dependence Scale 21:

In this study, participants have filled out EDS-21 using "Trakya University E-Survey System". EDS-21 is a form which has been developed about exercise dependency and composed of 21 questions so that is used to self evaluation (1, 2). According to the answers given by the participants, they are classified as non dependent asymptomatic, non dependent symptomatic or dependent by using the scale. This classification contains seven different criteria such as tolerance, deprivation, loss of control, time, effect of intent, cutbacks in other activities and continuity. Tolerance among these criteria is formed because of finding out that the exercise is not sufficient by feeling less exhausted and satisfied so that in the end increase in the amount is inevitable. On the other hand, deprivation is the feeling of inconvenience when not exercised and the demand of exercise again to cope with that. Doing an exercise more in quantity and in an elongated time as planned is called effect of intent. Decrement of ability to quit the exercise when wanted is called loss of control. Other than these, sparing most of the time to exercise and decreasing other activities or ignoring them is called effect of time. Continuity is another feature which is defined in EDS-21. This feature is defined as continuing to exercise despite the physical or psychological factors which affect the person's itself.

Statistical Analysis:

Kruskall Wallis test was used to compare the groups which are more than two; Mann-Whitney-U test was used to compare the data of the two groups. Chi-square test was used in the comparison of qualitative data in between the groups. $P<0.05$ value is accepted as the verge of statistical significance. The data is shown as mean±standart deviation. The statistical analysis of this study is generated with IBM SPSS Statistics.

RESULTS

After analyzing the data according to EDS-21, 9 out of 165 participants (5.5%) are dependent 107 are (64.8%) non dependent symptomatic and 49 are (29.7%) non dependent asymptomatic (Table 1). There was no significant difference in between the three groups by the mean of age. When BMI values are compared, there was a significant difference in between the groups and the BMI values of the symptomatic group is more than the asymptomatic group's ($p=0.026$; Table 1). The male to female ratio is respectively 141 to 24. When the groups are analyzed by the factor of gender, the percentage of males in the dependent group is

100%. Nevertheless, there was no significant statistical difference in between the symptomatic and asymptomatic groups (p=0.215; Table 1). When the cycling features of the participants are analyzed, it was determined that cycling age had similarities in between the groups (Table 2). However, the last year's weekly usage hours of bicycle in the dependent and symptomatic group is more than the asymptomatic group (respectively p=0.017 and p=0.015). Likewise the last year's weekly usage frequency of bicycle in the dependent and symptomatic group is more than the asymptomatic group (respectively p=0.005 and p=0.044). The last year's weekly usage of bicycle frequency in the dependent group is found significantly more than the symptomatic group (p=0.016). While comparing the average period of bicycle exercises in between the groups, the symptomatic group's cycling hours were found more than the asymptomatic group's cycling hours (p=0.012). However, there was no statistical significant augmentation in exercise hours between symptomatic and asymptomatic groups pursuant dependent group (respectively p=0.808 and p=0.350).

In this study, all of the group's consumption of alcohol and cigarettes found statistically similar in percentages (Table 3). Furthermore, there was no difference in manifestation of physical discomfort. In our study, ratios of the incidence of the participants who marked out that they do not have any chronic disease was similar (p=0.962) (Table 3).

All of the subjects of the dependent group (9/9) pointed out that they were doing at least one another branch of sports additionally. The exercise dependence scores were significantly lower in the participants who do not do another branch of sport (p=0.013).

It was determined that 46 of the participants who are identified as dependent had bicycle license. It was seen that 4 of 46 (8.7%) participants is in the dependent group. There was no significant difference between asymptomatic, symptomatic and the dependent groups when compared by having a license (Table 2).

There was no significant difference regarding to passed physical ailment (Table 3). When the participants in all groups were compared in function of the purpose (transportation/hobby, off-road, race, race+off-road) to use a bicycle, there was no significant difference in between them (p=0.620). Race purposed usage was seen higher in the dependent group than the other groups (Table 4).

DISCUSSION

After analyzing the cyclists between the ages of 18-62 with EDS-21, the rate of exercise dependency was found 5.5%. In prior studies, the rate of exercise dependency was found 12% (5) amoung the adults who exercise on regular basis and 6.9% (8) at the young students educating in the sports school. It was remarked 3.6% among the people who are between ages 17-74 and do not exercise regularly (8). In this study, the state of being low in the exercise dependency than in the other studies might be caused by; this is a study which is performed on cyclists. Because; cycling is not just for sports, it is used for transportation, excursion and many other purposes and it embraces a larger group of participants. In our study, it was seen that the exercise dependency rate was 8.7% when only analyzed the licensed cyclists. Paying attention to the license status in the further studies could provide more genuine results of the sports branch which is to be viewed.

After analyzing the participants in function of gender, all of the dependent participants seem to be male in this study. It is seen in the literature that males generate most of the dependent groups (3, 5, 7). Exercise dependency risk was found more at the males in the literature (9). Composition of the dependent group being all male could be caused by being not homogene by the angle of participants and having a percentage of 85.45% composed by males. When looked by the factor of gender, most of the studies which investigated the population of males and females, male participants compose mostly all (3, 5, 6, 7). Further studies investigating exercise dependency in female participants would ease us to understand the ratio of exercise dependency in female participants.

Table 1: Classification of the Groups According to Demographical Characteristics, Gender and Exercise Dependency

	Asymptomatic (n=49)	*Symptomatic (n=107)*	*Dependent (n=9)*	*P*
Age (year)	27.2 ± 9.3	28.2±10.0	23.7 ± 7.8	0.386
Height (cm)	176.3±9.7	176.4±6.9	177.7±5.8	0.910
Weight (kg)	71.3±12.9	75.8±14.4	69.5±9.4	0.104
BMI (kg/m²)	22.8±2.9	24.2±3.8*	22.0±2.6	***0.026***
Gender (Male %)	79.6	86.9	100.0	0.215
Percentage (%)	%29.7	%64.8	%5.5	-

BMI: Body mass index; *Significant difference according to the asymptomatic group

In this study, it is seen that there is a significant difference in between the groups when looked at the BMI values (p=0.026). However, it was interesting that the BMI of symptomatic group was 24.2, asymptomatic group was 22.8 and dependent group was 22.0. It is seen that difference between the groups was caused by the value of BMI in symptomatic group was higher than the asymptomatic group's value (Table 1). In the literature, there are conflicting data at the comparison of BMI values in between the dependent, symptomatic and the asymptomatic groups (6). Generally, the BMI value of the dependent group was determined low than the others (6, 10, 11). In our study, the BMI value of the dependent group was lower than the others. However, the statistical significant difference in between the groups was not caused by dependent group BMI values.

Table 2: Bicycle Usage Features of the Groups ***(* Significant difference according to the asymptomatic group; # significant difference according to the symptomatic group)***

	Asymptomatic (n=49)	*Symptomatic (n=107)*	*Dependent (n=9)*	*P*
Bicycle Using Age (year)	10.2±6.4	10.1±7.7	11.6±9.6	0.764
Weekly Cycling Hours in the Last Year (hour)	7.8±7.4	11.6±11.1 *	19.6±15.5 *	***0.009***
Cycling on Regular Basis for How Many Years (year)	4.5±4.8	5.8±7.2	3.5±1.8	0.661
How Many Time Does the Participant use a Bicycle during a Week, in the Last Year	3.5±3.3	5.9±12.5*	6.8±3.6*#	***0.005***
A Bicycle Exercise Duration (hour)	2.1±1.2	3.2±3.2*	12.1±29.2	***0.043***
Doing Additional Sports Beside Cycling (%)	59.2	76.6*	100*	***0.013***
Licensed Ones (%)	26.5	27.1	44.4	0.521

Prior studies conducted on the other sport branchs' athletes, exercise dependency risk is related with exercise frequency (3, 6). In our study, the dependent group's weekly training count and duration was found higher than the other groups' and it was seen that weekly training hours were more than 19 hours in the last year (Table 2). By this point, cycling does not have anything peculiar to other sport branches. Furthermore, in our study, the participants of the dependent group were doing another sport besides cycling. This finding makes us think that bare cycling is not a sport branch sufficient to trigger an exercise dependency.

Table 3: Cycling Purposes among Groups ***(Cycling purposes and according to group comparison p=0.620)***

		Asymptomatic (n=49)	*Symptomatic (n=107)*	*Dependent (n=9)*
Cycling Purposes	*Transportation and Hobby (%)*	69.4	65.4	44.4
	Off-Road (%)	14.3	15.9	11.1
	Race (%)	8.2	7.5	22.2
	Race+Off Road (%)	8.2	11.2	22.2

Moreover, license status and exercise dependency according to be licensed was evaluated. It was more difficult to evaluate exercise dependency ratios of the participants when licensed and amateur athletes are enrolled together (5). In our study, it was foreseen that licensed athletes will have more tendency to be exercise dependent than the amateurs because of doing this sport more professionally and regularly. Therefore the groups were compared by the angle of being licensed but there was no significant difference in between them (p=0.521). Furthermore; it is seen that when the purpose of cycling was inspected, "Transportation and Hobby" was the main reason of cycling in all of the groups (Table 3). When looked at the different purposes like off-road and racing, there was no significant difference in between the groups (p=0.620).

Table 4: Consumption of Cigarettes and Alcohol of the Groups and Incidence of Affection

	Asymptomatic (n=49)	*Symptomatic (n=107)*	*Dependent (n=9)*	*P*
Cigarette Consumption (%)	22.4	23.4	44.4	0.345
Alcohol Consumption (%)	43.1	48.6	44.4	0.830
Denoted Physical Ailment (%)	4.1	13.1	11.1	0.228
Denoted Chronic Ailment (%)	12.2	12.1	0	0.962

Consumption of alcohol and cigarettes were questioned separately in this study. Four out of 9 people in the dependent group is determined as consumer of both. Remaining 5 out of 9 is not a consumer of both. According to the data of our study, consumption of alcohol or cigarettes does not create any significant difference on exercise dependency frequency and this result is equidistant to other studies in the literature (Table 4). There are a few studies which compare consumption of alco-

hol and cigarettes and exercise dependency. In a study conducted amongst bodybuilders in Paris, Lejoyeux et al. (12) found out that consumption of cigarettes and alcohol is related with exercise dependency frequency. In the same study, alcohol consumption in dependent and non dependent groups were related, but consumption of cigarettes was lower in dependent group. In our study all the three groups have similar consumption frequencies of cigarettes and alcohol (Table 3).

Eating disorders and exercise dependency were closely related in the literature. There are studies available which show doing sports could cause eating disorders to thrive (13). However, there was not a comparison correlated with eating disorders in this study. Eating disorders could be considered in the further studies and by dint of this consideration, relation between cycling and eating disorders could be analyzed.

Consequently in this study, when cyclists are analyzed according to EDS-21, the rate of exercise dependency is found 5.5%. Amongst cyclists, the dependent group's exercise duration and frequency were found more than the symptomatic group and the asymptomatic group. In additoion, all of the groups are similar on the behalf of consumption of alcohol and cigarettes. This situation makes us think that consumption of cigarettes and alcohol is not related with exercise dependency.

Ethics Committee Approval: This study was approved by Trakya University Faculty of Medicine Scientific Researches Ethics Committee.
Informed Consent: Written informed consent was obtained from the participants of this study.
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