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A study of relation between sports addiction, Internet use, and video gaming among a sample of Egyptian sports clubs' attendants

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Abstract

Background Addiction is a medical condition characterized by compulsive engagement in rewarding stimuli, despite adverse consequences and is considered a disorder of the brain's reward system. Exercise addiction (EA) involves excessive concerns for exercise routines, an abusive practice, and the inability to control one's own behavior, as well as the presence of psychological processes that are typical of behavioral addictions such as abstinence. The aim of the study is to translate and validate the Exercise Dependence Scale 21 Manual and also to detect the presence of sports addiction among a sample of Egyptian sports clubs' attendants and to find out the rate of Internet and video gaming addiction among them.

Results The Exercise Dependence Scale 21, Internet Addiction Test (IAT) Scale and Video Gaming Addiction Scale were used on a convenient sample regularly practicing sports. The participants were divided into 3 groups according to the result of (EDS21-M): (a) sports addicts (exercise-dependent), (b) symptomatic at risk, and (c) control group (asymptomatic non-dependent). The average age of the group of sports addicts was 28.67 years, 88% of the sample were males, the control group showed significantly higher incidence of problematic gaming of 40.8 % compared to only 33.33% among sports addicts, and higher levels of potential problematic Internet use of 28.57% versus 21.43% in the symptomatic at risk of sports addiction and 22.22% in the sports addicts and also 78.43% of cases with sports addiction or symptomatic at risk had normal Internet use versus 71.43% of the control group. The addicted gamers represented 3.92% of the sports addiction and those symptomatic at risk, and 82.35% of the same group showed no problem with video gaming addiction. There were no correlations between exercise dependence and Internet addiction

Conclusions Being addicted to sports may absorb most of the time and energy of the person and compensate him psychologically and in physically and mentally healthy ways than to be indulging and spending the time and effort in video gaming and Internet in a pathological addictive way.

Keywords Sports addiction, Video games, Internet addiction

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Background

Over the last 400 years, statements frame addiction as the involving of strong, overpowering urges; yet over the last 200 years, this word has become considered more and more disease-like in connotation [28].

Addiction is a medical condition characterized by compulsive engagement in rewarding stimuli, despite adverse consequences [3]. It is considered a disorder of the brain's reward system which arises through transcriptional and epigenetic mechanisms and occurs over time from chronically high levels of exposure to an addictive stimulus [33]. The substances that are considered to be addictive are mentioned in DSM-5 as substance use disorders. Behavioral addictions have been proposed as a new class in DSM-5, but the only category included is gambling disorder. Internet gaming disorder is included in the appendix as a condition for further study [38]. Both behavioral and substance addictions have many similarities in natural history, phenomenology, and adverse consequences [7].

Albrecht et al. [2] and Grant et al. [11] described different types of behavioral addictions, among which are compulsive exercise addiction, video game playing addiction, and Internet addiction. Exercise addiction is characterized by excessive and obsessive exercise patterns that eventually lead to physical and psychological distress [1]. One of the thornier issues in defining exercise addiction concerns how to distinguish it from healthy exercise. Recreational exercise adds to the quality of life whereas addiction takes away from it [13]. Exercise dependence is often used interchangeably with the term exercise addiction [37]. Furthermore, Sussman et al. [36] estimate that the prevalence of exercise addiction in the general population to be close to 3% and they suggest that up to 25% of people with one addiction have another addiction.

Internet is being widely used all around the world. The number of users is increasing day by day. The usage of Internet and other social networks has increased by 230 percent in the USA since 2007 [9]. Globally there is an 82% increase in 2009 with an average of 5 and half hours spend on Internet and other social networks [27]. Accordingly, Internet addiction disorder can be defined by a need to "escape from oneself," which may account for the excessive playing of Internet games [20]. Phenomenologically, there appear to be at least three Internet addiction subtypes: excessive gaming-gambling, sexual preoccupations (cybersex), and socializing or social networking, including e-mail and messaging [25]. International prevalence rates for Internet addiction range globally from 1.5 to 8.2% [30].

Over the last 15 years, research into various online addictions has greatly increased [19]. Internet gaming disorder most often involves specific Internet games,

but it could involve non-Internet computerized games as well, Internet gaming disorder has significant public health importance, and additional research may eventually lead to evidence that Internet gaming disorder (also commonly referred to as Internet use disorder, Internet addiction, or gaming addiction) has merit as an independent disorder" ([12]). Some researchers consider video games as the starting point for examining the characteristics of gaming disorder, while others consider the Internet as the main platform that unites different addictive Internet activities, including online games. a reciprocal causality was reported between video gaming disorder and the level of sports and exercise [40]. Internet addiction can alter neurobiology, and its symptoms can be alleviated through exercise [23].

Haylett et al. [16] in their research on addictive behaviors find that exercise tends to cluster with food disorders, caffeine use, and shopping. A more recent study by MacLaren & Best [24] replicated these findings and added work addiction as another co-occurring disorder. Hence, the aim of the present study was to find out if Internet and video gaming use disorders would be related to sports addiction as well.

This study aimed to translate and validate the Exercise Dependence Scale-21 Manual. Also, to detect the presence of sports addiction among a sample of Egyptian sports clubs' attendants and to find out the rate of Internet and video gaming addiction among them and to assess if there is a relation between them.

Methods

This is a comparative cross-sectional study done in gymnastic halls and was part of a sports club located in Great Cairo.

Subjects

One hundred persons regularly practicing gym exercise "1 h per day for at least 5 days a week" were recruited from sports club gym centers. All participants consented to take part in the study and selected by a convenient manner. All of them fulfilled the inclusion criteria: (a) males and females were included and (b) ages ranged from 18 to 45 years. Exclusion criteria were (a) refusing to give consent and (b) a past history of/or comorbid psychiatric disorders.

Methods

At first, permission from the author was obtained to be translated and then validity to the Exercise Dependence Scale-21 were done by the following stages: the original scale was *forward translated* from English into Arabic by a professional translator and then *got translated back* into English by a psychiatric consultant

who was unaware of the original version of the scale. The original English and back-translated versions were compared by 3 experts to ensure consistency of the two versions and to reconcile any problematic items. A *pilot study* was done through pre-testing 10 bilingual individuals, and in a pilot study, both the Arabic and English versions were distributed and answered. Pre-test respondents were administered with the instrument and systematically debriefed. This debriefing asked the respondents whether they could repeat the question in their own words, what came into their mind when they heard a particular phrase or term. It also asked them to explain how they choose their answer. Finally, the pre-test respondent were asked to choose which of the alternatives conforms better to their usual language. Then, the scale underwent a process of validation through (a) face validity: through using the respondents to answer the question: *Does the questionnaire measure what it intended to measure?* This is the subjective view of the respondents to the survey (not experts). (b) Content validity: done by an expert consultant psychiatrist through asking him to answer the question: *Is the question measurement in the test "essential" to the intended measurement?* The statistical study of the pre-test and post-test of the pilot group proved no significant differences in the results and hence validated the translation of the questionnaire. By that, we fulfilled the first aim of the study, to have a standardized scale to measure exercise addiction in Arabic language.

Procedure

The aim of the research was explained to all participants who provided before that an informed consent to take part in the study. The responses were collected and confidentiality of the participants was ensured. Also, an approval to perform the questionnaires was obtained from the clubs included.

All participants who met the inclusion criteria and were willing to participate were subjected to the following:

- 1) Psychiatric interview: a semi-structured interview emphasizing on (a) demographic data, (b) history of substance abuse, (c) use of body building supplements or hormones enhancers, and (d) main reasons for practicing exercise.
- 2) Exercise Dependence Scale-21 Manual (EDS21) - M (Heather and Down 2002): The Arabic version was used.
- 3) Internet Addiction Test (IAT) Scale by Young [39]. The Arabic version was used [15].
- 4) Video Gaming Addiction Scale by Lemmens et al. [22]. The Arabic version was used [26].

Statistical analysis

All data were subjected to a one-way analysis of variance using GLM procedure. All values were presented as the mean + standard deviation. Significant differences were determined by Duncan's new multiple range. Data were presented, and a suitable analysis was carried out according to the type of data obtained for each parameter.

Results

The participants were divided into 3 groups according to the result of (EDS21-M): (a) sports addicts (exercise-dependent), (b) symptomatic at risk, and (c) control group (asymptomatic non-dependent).

Males represented 88% of the sample and that 9% were considered sports addicts and were all males. There was a statistically significant difference regarding education as most the participants had finished their university education ($p=0.041$). Regarding occupation, 71% have skilled jobs versus 17% unemployed and 12% who were still university students with a statistically significant difference (0.020). Also, 35% of the participants were single and 65% were married. All exercise addicts were postgraduate males, 88.89% were skilled workers, and 77.78% were single. Age ranged from 18 to 43 years with no statistically significant difference between the three groups (Table 1).

There was no statistically significant difference between the 3 groups regarding Internet addiction. Yet, the control group showed higher levels of potential problematic Internet use as 28.57% had potential problems versus 21.43% in the symptomatic at risk of sports addiction group and 22.22% in the sports addicts group. None of the participants had an Internet use problem (Table 2, Fig. 1).

Table 3 reveals that 40.82% of the control group were considered problematic gamers versus 33.33% of the sports addict group. There was a highly statically significant difference between the three groups regarding their scores on the Video Gaming Addiction Scale ($p=0.001$) (Fig. 2).

Regarding the relation of Internet addiction to risky sports practice, Table 4 adds that 78.43% of cases with sports addiction or at risk had normal Internet use versus 71.43% of the control group and 28.57% of the control group versus 21.57% of the addicted and at high risk for sports addiction were potential problematic Internet users with no statistically significant difference ($p=0.419$).

The addicted gamers represented 3.92% of the sports addiction and those at risk, and 82.35% of the same group showed no problem with video gaming addiction. While the control group revealed that 40.82% were problematic gamers versus 59.18% who had no

Table 1 Demographic data of the participating individuals

		Groups								Chi-square		
		Sports addicts (9)		Symptomatic at risk (42)		Control (49)		Total		χ^2	P value	
		N	%	N	%	N	%	N	%			
Sex	Male	9	100.00	37	88.10	42	85.71	88	88.00	1.470	0.479	
	Female	0	0.00	5	11.90	7	14.29	12	12.00			
Education	University student	0	0.00	5	11.90	14	28.57	19	19.00	6.402	0.041*	
	Post graduate	9	100.00	37	88.10	35	71.43	81	81.00			
Work	Student	0	0.00	5	11.90	7	14.29	12	12.00	11.668	0.020*	
	Skilled	8	88.89	35	83.33	28	57.14	71	71.00			
	Unemployed	1	11.11	2	4.76	14	28.57	17	17.00			
Marital status	Single	7	77.78	30	71.43	28	57.14	65	65.00	2.739	0.254	
	Married	2	22.22	12	28.57	21	42.86	35	35.00			
		Groups								ANOVA		
		Sports addicts		Symptomatic at risk		Control				F	P value	
Age	Range	23	-	36	18	-	43	20	-	40	0.116	0.891
	Mean \pm SD	28.667	\pm	4.153	29.786	\pm	6.569	29.714	\pm	6.674		

Table 2 Internet Addiction Test among studied sports addicts and control

Results of young Internet addiction tests		Groups								Chi-square	
		Sports addicts		Symptomatic at risk		Control		Total		χ^2	P value
		N	%	N	%	N	%	N	%		
Normal Internet user		7	77.78	33	78.57	35	71.43	75	75.00	0.656	0.720
Potential problematic Internet user		2	22.22	9	21.43	14	28.57	25	25.00		
Total		9	100.00	42	100.00	49	100.00	100	100.00		

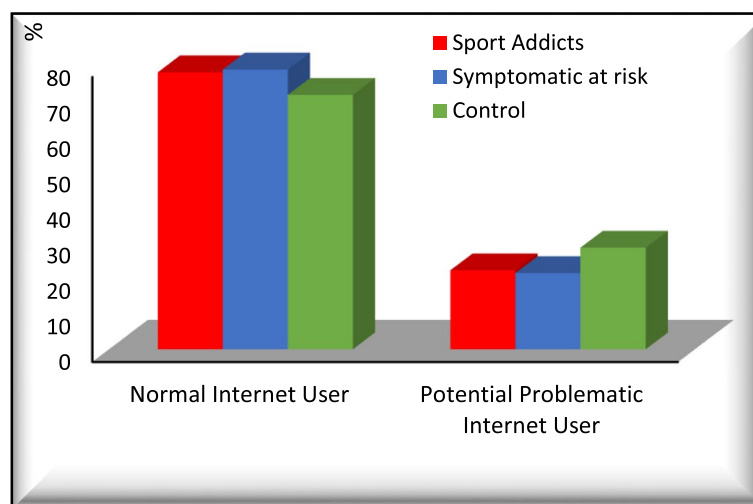
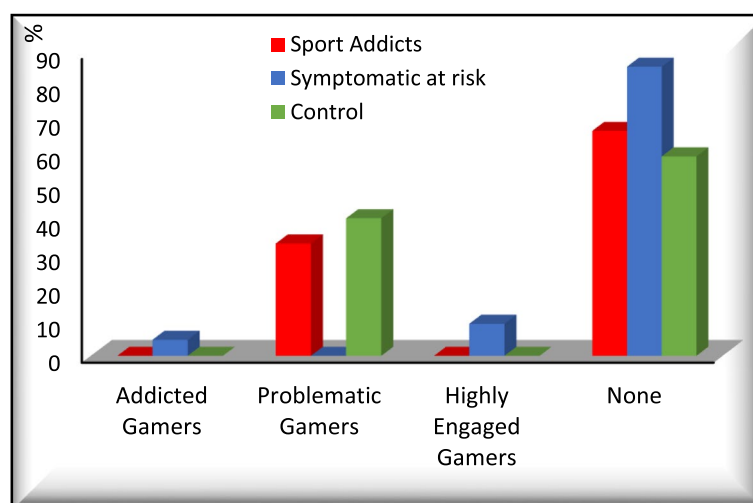
**Fig. 1** Internet Addiction Test among the studied sports addicts and control

Table 3 Video Gaming Addiction Scale among sports addicts and control

Results of video gaming addiction scale	Groups								Chi-square	
	Sports addicts		Symptomatic at risk		Control		Total		χ^2	P value
	N	%	N	%	N	%	N	%		
Addicted gamers	0	0.00	2	4.76	0	0.00	2	2.00	27.394	<0.001*
Problematic gamers	3	33.33	0	0.00	20	40.82	23	23.00		
Highly engaged gamers	0	0.00	4	9.52	0	0.00	4	4.00		
None	6	66.67	36	85.71	29	59.18	71	71.00		
Total	9	100.00	42	100.00	49	100.00	100	100.00		

**Fig. 2** Video Gaming Addiction Scale among sports addicts and control**Table 4** Cases with sports addiction or at risk of Internet use

Results of young Internet addiction tests	Group						Chi-square	
	Cases		Control		Total		χ^2	P value
	N	%	N	%	N	%		
Normal Internet user	40	78.43	35	71.43	75	75.00	0.654	0.419
Potential problematic Internet user	11	21.57	14	28.57	25	25.00		
Total	51	100.00	49	100.00	100	100.00		

problem with video gaming addiction. There was a very high statistical difference between both groups ($p < 0.001$) as shown in Table 5

Table 6 shows that there was no correlation between exercise dependence and Internet addiction

Table 7 concluded that the 7 components of the Exercise Dependence Scale-21 Manual were significantly very high among the exercise-dependent and high among the symptomatic at risk group (Fig. 3).

From Table 8, it was deduced that there was a positive correlation between continuance scale of Exercise

Dependence Scale-21 Manual and problematic Internet use among exercise-dependent.

From Table 9, it was deduced that a positive correlation between withdrawal effect, lack of control, time and intention effects, and video gaming addiction in exercise-dependent players.

Discussion

Recently, there has been an interesting clinical and scientific shift in perspective with many believing that addiction should encompass the compulsive engagement in

Table 5 Relation of video gaming addiction to risky sports practice

Results of video gaming addiction scale	Group						Chi-square	
	Cases		Control		Total		χ^2	P value
	N	%	N	%	N	%		
Addicted gamers	2	3.92	0	0.00	2	2.00	20.914	<0.001*
Problematic gamers	3	5.88	20	40.82	23	23.00		
Highly engaged gamers	4	7.84	0	0.00	4	4.00		
None	42	82.35	29	59.18	71	71.00		
Total	51	100.00	49	100.00	100	100.00		

Table 6 Correlation between sports addiction and Internet addiction

Results of young Internet addiction tests	Groups									ANOVA	
	Sports addicts			Symptomatic at risk			Control			F	P value
Range	26	-	67	20	-	61	25	-	58	0.842	0.434
Mean \pm SD	44.667	\pm	15.075	38.810	\pm	13.369	38.143	\pm	14.191		

activities such as smoking, Internet use, and gaming, in addition to its conventional relation with pharmacologic rewards. Many studies have been completed to try to ascertain the prevalence of substance and behavioral addictions and the co-occurrence of two or more addictions. All of them suggested that addictions are sharing a similar neurobiological vulnerability [10].

It is well documented that exercise is both physically and psychologically beneficial to health, however exercise without limits may have a negative impact on wellbeing, it could in some cases, be harmful [29].

The notion that compulsive or problematic use of the Internet is a variant of addictive behavior is somewhat controversial, however the term “Internet addiction” (IA) has gained currency [4].

In the present study, out of 100 persons who were practicing sports, 9 were found be sports addicts, according to the “Exercise Dependence Scale-21 Manual” [14], the Arabic version that was translated after getting the written permission and after applying the tests for validity and reliability. In addition, 42 persons were found to be symptomatic and at risk, while 49 were asymptomatic and non-dependent, those were represented as a control group. This means that 9% of the studied sample were fulfilling the criteria of sports addiction, that was manifested by the significant high scores on the withdrawal scale and the tolerance one. This is not in agreement with Sussman et al. [36] who estimates that the prevalence of sports addiction in the general population to be close to 3% nor Lejoyeux et al. [21], who estimated the rate of sports addiction to be as high as 42% among the members of a Parisian fitness club.

Furthermore, 42% of the sample showed non-physiological dependence, although they gave high scores on the total one, yet they were not high on the two scales tolerance and withdrawal, that indicate physiological dependence [14].

There were 88 males and 12 females, whereas the 9 sports addicts were males, 88.1 % of symptomatic at risk group and 85.7% of control group were males. Probably, this higher male representation would be due to the females staying home taking care of the children or the house responsibilities and not interested in sports and gyms. These results are not in agreement with that of Bóna et al. [5] who found that most of the recruited gym visitors were females. The highest representation was those who were working (71%) and 17% were unemployed. This could be due to that several participants were in their late twenties and probably graduates and already found jobs. Also, 22.2% of sports addicts were married, and 71.4 % of the symptomatic at risk group were single.

All of the sports addicts were post graduates, 81 % of the symptomatic at risk group were post-graduate compared to 71.43 % of control group, versus 19% of the total sample who were still students, and the difference between the groups was significant, a result that could be explained by the fact that the group of sports dependence and that who were at risk, were older, and also had longer duration in practicing sports. This is similar to what Bóna et al. [5] concluded in their study as most of their samples were college educated.

The mean age of the group of sports addicts was 28.667 years, those at risk were 29.786, and the control

Table 7 Results of the 7 components of “Exercise Dependence Scales-21 Manual” among sports addicts and control group

	Groups				ANOVA			Tukey's test		
	Sports addicts				F	P value	SP&SY	SP&C	SY&C	
	Range	Mean ±SD	91	-						
Total score	91	97.778	±	107	49	-	96	21	35	469.756
				6.476	67.833	±	11.359	24.857	±	4.721
Withdrawal effects	8	14.333	±	18	3	-	17	3	3	100.732
				3.808	9.214	±	3.784	3.000	±	0.000
Continuance	3	10.444	±	14	3	-	15	3	13	15.562
				4.275	9.238	±	3.594	5.571	±	3.323
Tolerance	11	15.333	±	18	4	-	18	3	7	136.835
				2.739	12.500	±	3.989	3.571	±	1.414
Lack of control	13	14.667	±	16	4	-	13	3	4	272.693
				1.118	9.214	±	2.435	3.143	±	0.354
Reduction of other activities	9	11.333	±	13	3	-	15	3	4	92.614
				1.500	8.095	±	3.091	3.286	±	0.456
Time	14	16.000	±	18	4	-	16	3	4	197.546
				1.414	10.167	±	3.200	3.286	±	0.456
Intention effects	12	15.667	±	18	4	-	14	3	3	234.294
				2.345	9.548	±	2.769	3.000	±	0.000

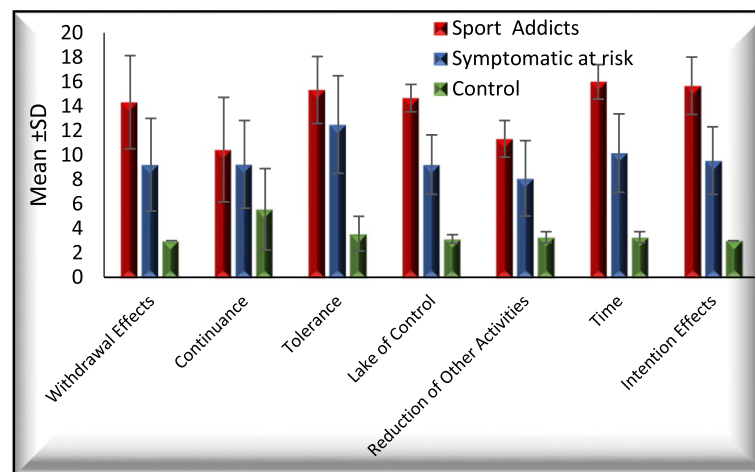


Fig. 3 Results of the 7 components of “Exercise Dependence Scale-21 Manual”

Table 8 Correlation between the different components of the “Exercise Dependence Scales-21 Manual and the results of young Internet addiction test

	Results of young Internet addiction tests						T test	
	Normal Internet user			Potential problematic Internet user			t	P value
	Mean	±	SD	Mean	±	SD		
Total score	72.875	±	16.590	74.000	±	12.353	-0.209	0.835
Withdrawal effects	10.250	±	4.313	9.636	±	4.105	0.422	0.675
Continuance	8.875	±	3.715	11.545	±	2.945	-2.196	0.033*
Tolerance	12.975	±	4.258	13.091	±	2.548	-0.086	0.932
Lack of control	9.850	±	3.175	11.364	±	2.461	-1.461	0.150
Reduction of other activities	8.650	±	3.183	8.727	±	3.036	-0.072	0.943
Time	11.575	±	3.544	9.818	±	4.143	1.405	0.166
Intention effects	10.850	±	3.853	9.818	±	2.183	0.847	0.401

group was of mean age of 29.714. The age range was between 18 and 43, and this could be explained as this age group is usually the ones who are more interested in keeping their body shape and have more free time versus elder population who would be busy with the career positions or unfit to regularly visit the sports gyms. This is almost in agreement with a study in Hungarian gyms which concluded that the mean age of participants was 31.9 years [5] but not in agreement with Piątkowska et al. [31] as the average age of the respondents in sports camp and gyms in their study was 20 ± 10.9 years.

The studied participants with sports addiction (22.22%) and the symptomatic risk group (21.43%) showed less potential problematic Internet use than the control ones (28.57%) with no statistically significant difference ($p=0.720$). Moreover, 75% of the total participants had normal Internet use. It is worth mentioning that none of the participants had Internet addiction criteria.

Looking at the relation between the control groups versus the risky sports practice, it was postulated that 71.43% and 78.43%, respectively, have normal Internet use, whereas 28.57% of the control group show potential problematic Internet use versus 21.57% from the risky sports practice group. Probably, being too engaged in sports leaves no time for the excessive use of the Internet and also the gratification the person feels and the change in fitness and shape makes them less attached to the Internet.

These results agree with Saeid and her colleagues [34] who conducted a study on Egyptian and Malaysian medical students in Tanta University using the Internet Addiction Test to assess severity of Internet addiction. They found that average Internet users (normal users and mild dependence) represented 64.1% of the students while moderate dependence represented 33.2% of the students and severe dependence represented 2.7% of the students, whereas Internet addiction was found to be mild in 42.3

Table 9 Correlation between the different components of the “Exercise Dependence Scales-21 Manual & video gaming addiction

		Results of video gaming addiction scale				ANOVA	
		Addicted gamers	Problematic gamers	Highly engaged gamers	None	F	P value
Total score	Mean	58.000	103.333	64.000	72.548	6.357	0.001*
	SD	0.000	6.351	6.928	14.402		
Withdrawal effects	Mean	6.000	16.000	9.500	9.952	2.906	0.044*
	SD	0.000	1.732	1.732	4.254		
Continuance	Mean	9.000	12.000	7.000	9.524	1.077	0.368
	SD	0.000	0.000	1.155	3.946		
Tolerance	Mean	13.000	15.000	10.000	13.143	1.058	0.376
	SD	0.000	3.464	5.774	3.823		
Lack of control	Mean	6.000	14.333	9.000	10.190	3.793	0.016*
	SD	0.000	1.155	0.000	3.038		
Reduction of other activities	Mean	8.000	12.333	7.000	8.595	1.893	0.144
	SD	0.000	1.155	0.000	3.246		
Time	Mean	8.000	17.333	11.000	10.929	3.880	0.015*
	SD	0.000	1.155	2.309	3.605		
Intention effects	Mean	8.000	16.333	10.500	10.357	3.444	0.024*
	SD	0.000	1.155	2.887	3.470		

%, moderate in 29.9%, and severe in 1.8% in Khayat et al. [18] research. Meanwhile, the current results also disagree with Kamal and Mosallem [17] who stated in their study that the prevalence of problematic Internet use (identified as severe dependence by the Internet addiction test) is 2.6%. This is supported by the presence of other studies that stated that Middle Eastern prevalence of problematic Internet use (identified as severe dependence) varies between 1 and 12% [6]. However, the results obtained from the current research and the other Egyptian studies are not in line with a meta-analysis conducted in 2014 from 80 previous studies on 89,281 participants from 31 nations using the Internet Addiction Test that showed a global prevalence in the Middle East being 10.9% [8].

There was no correlation between sports addiction and Internet addiction. Therefore, the amount of time training in sports was positively associated with a higher level of self-control, thus limiting the time they spent on the Internet. Also, sports and physical exercise programs can be combined with existing intervention strategies or pharmacological treatment for Internet addiction.

Video gaming being most prominent among younger people was hereafter studied with sports addicts. The results showed that problematic video gaming addiction was more prevailing among the control group (40.8%) as presented in the current research, versus 33.33% of sports addicts who were also problematic gamers. Those who were symptomatic and at risk for developing sports addiction represented 4.76% for being addicted gamers.

However, as regards the relation between sports and video gaming addiction scale, the control group displayed that 40.82% of them were problematic gamers and 59.18% showed no gaming addiction nor problems. This seems to be higher than the risky sports practice group (addict and symptomatic at risk) where addicted gamers, problematic gamers, highly engaged gamers, and none addicted were 3.92%, 5.88%, 7.84%, and 82.35%, respectively. Thus, totally the problematic video gaming addiction was more prevailing among the control group with a very highly significant difference ($p=0.001$). However, among the cases, 3.92% were addicted to video games, yet the number of studied cases was low to set that as a prevalence. From the results in the current research, it can be presumed that sports were limiting time spent in games. Probably, these highly motivated individuals would prefer spending their time in sports than playing. The more they engage in sports the less time they spend on videogaming.

Stevens et al. [35] in their meta analysis estimated that the global pooled prevalence of gaming disorder in the general population was 3.05%, and this figure was adjusted to 1.96%, but to keep into consideration that higher gaming disorder rates were found among adolescents and males, as well as in studies employing smaller sample sizes or lower cutoffs.

These results could be supporting the idea of being addictive to sports may absorb most of the time and energy of the person and compensate him psychologically and in physically and mentally healthy ways than to

be indulging and spending the time and effort in video gaming and Internet in a pathological addictive way. So, sports might be considered in a way a healthy addictive behavior that can replace the pathological one putting in mind not to reach its harmful extreme.

Although these findings may reflect that of Penedo and Dahn [29], who stated that exercise is both physically and psychologically beneficial to health. Yet indeed is not in agreement with the recent findings supporting the assumption of common mechanisms that underlie the development and maintenance of both behavioral and substance-related addiction [32] or that of Sussman et al. [36] which suggest that up to 25% of people with one addiction have another.

The limitations of this study were that the studied group was taken from two branches of one sports club that represents only small social category. That did not reflect regional differences among Egyptian sports practices, and our study was conducted on only high social class group, so, it did not represent the different categories of the society.

Conclusions

Being addicted to sports may absorb most of the time and energy of the person and compensate him psychologically and in physically and mentally healthy ways than to be indulging and spending the time and effort in video gaming and Internet in a pathological addictive way.

Recommendations

- Awareness of the dangers and risks of overdoing sports should be empathized among sports practicing youth.
- Liaison psychiatry (consultation psychiatry) should be involved in all kinds of sports medicine, team works including orthopedics, surgeons, general medicine physicians, clinical pathologists, and psychiatrists should work together with psychologists and sports trainers to get the best results.
- Further studies that target the different social classes should take places in further studies.

Abbreviations

EA	Exercise addiction
IAT	Internet Addiction Test
EDS21	Exercise Dependence Scale-21 Manual

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Authors' contributions

PV has made most contribution to the work, acquiring, analyzing, and interpreting the data and assisting in writing the manuscript, while SF has shared in designing the study and shared in analyzing and interpreting of the data and SB was a major contributor in writing, editing, and submitting the manuscript. ME is the group leader and supervisor of the research group who has designed the study and approved all aspects of the work for the accuracy and integrity; AO contributed to the designing of the study, and editing and final approval for publication. The authors read and approved the final manuscript.

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Availability of data and materials

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Declarations

Ethics approval and consent to participate

All procedures were revised and approved by the "Research Ethics Committee at Benha Faculty of Medicine," and all cases were informed about the study and signed a consent form. An official permission was obtained from the directors of gymnastic halls in Cairo to conduct the study.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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