



Factors associated with performance enhancing substances use in Portuguese Fitness settings

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Background

According to The Portuguese "National Plan for Reducing of Addictive Behaviors and Dependencies 2013-2020", the use of performance-enhancing substances (PES) by recreational sports practitioners is a pertinent and current topic, particularly in the field of public health¹. The people who use the gyms and fitness centres come from diverse socio-demographic conditions and have different purposes and motivations, which could influence the risk for PES use². In this context, and since there are practically no studies on the use of PES outside competitive sport in Portugal, it is necessary to investigate the reality of this settings, considering that the use of these substances can be associated with dangerous side effects or even fatal with long-term use^{3,4}.

Research Question

What is the influence of socio-demographic variables, exercise profile and smoking tobacco and alcohol habits in PES use among a sample of Portuguese gym / fitness users.

Method

Cross-sectional, quantitative and exploratory study among a convenience sample of 453 Portuguese gym/fitness users, recruited directly on social networks (Facebook) and by institutional email (via gyms). Data were collected via a structured on-line questionnaire. Statistical analysis was performed using SPSS 22.

Results

Table 1. Demographic, and PES use of gym users (n = 453)

	Minimum - Maximum	Mean ± Standard deviation	n (%)
Age (years)	16 - 79	35,64±13.08	
Age groups (years)	<=20		41 (9.1%)
	21 - 25		92 (20.4%)
	26 - 30		60 (13.3%)
	31 - 40		108 (23.9%)
	41 - 60		131 (29.0%)
>=61		20 (4.4%)	
Gender	Female		277 (61.3%)
	Male		175 (38.7%)
Smoking habits	No		399 (88.3%)
	Yes		53 (11.7%)
Alcohol habits	No		257 (57.0%)
	Yes		194 (43.0%)
PES use	No		402 (88.9%)
	Yes		50 (11.1%)*

*69,4% Males (n = 34); OD = 3.65, 95% CI (1.886, 7.066)

Females used mainly diuretics (73.3%) and males Anabolic Androgenic Steroids (AAS) (58.9%). A significant association was found between gender and the class of PES used, namely, females presented a positive association with the use of diuretics (p = .003, 95% CI = 0.002, 0.004) and males with the AAS intake (p = .026, 95% CI = (0.023, 0 .029)).

There was no statistically significant association between PES use and smoking tobacco ($\chi^2_1 = 0.319, p = .992$), neither in terms of consumed alcohol between users and nonusers of PES ($\chi^2_1 = 0.599, p = .439$).

Table 2. Sociodemographic characteristics as risk factors for PES use

	OR	95% CI for OR	
		Lower	Upper
Step 1 ^a	Gender (Male)	4.256	2.241 8.083
	Constant	0.057	
Step 2 ^b	Gender (Male)	3.835	2.000 7.355
	Education	0.728	0.599 0.884
	Constant	0.434	
Step 3 ^c	Gender (Male)	3.650	1.886 7.066
	Education	0.731	0.602 0.887
	Occupation		
	Student	0.278	0.105 0.739
	Unemployed	1.765	0.409 7.611
	Retired	0.000	0.000 0.000
	Other	0.454	0.056 3.658
Constant	0.564		

a. Variable(s) entered on step 1: Gender, being the reference category female.

b. Variable(s) entered on step 2: Education.

c. Variable(s) entered on step 3: Occupation, being the reference category "worker".

Table 3. Exercise profile as risk factor for PES use

	OR	95% CI for OR	
		Lower	Upper
Step 1 ^a	Training frequency	3.142	2.015 4.901
	Constant	0.007	
Step 2 ^b	Training frequency	2.682	1.703 4.224
	Time spent during each workout	3.002	1.401 6.429
	Constant	0.001	

a. Variable(s) entered on step 1: Training frequency.

b. Variable(s) entered on step 2: Time spent during each workout.

Table 4. Gym modalities associated with PES use

	PES use	Total	Pearson Chi-Square	d f	p	OR	95% CI for PES use	
							Lower	Upper
Bodybuilding	No	n 192 5 197	25.79 ^a	1	.000	8.23	3.20	21.16
	% within PES use	47.8% 10.0% 43.6%						
	Yes	n 210 45 255						
	% within PES use	52.2% 90.0% 56.4%						
Muay Thai	No	n 398 47 445	.032	*	6.35	1.38	29.25	
	% within PES use	99.0% 94.0% 98.5%						
	Yes	n 4 3 7						
	% within PES use	1.0% 6.0% 1.5%						
Pilates	No	n 303 45 348	5.37 ^a	1	.020	0.34	0.13	0.88
	% within PES use	75.4% 90.0% 77.0%						
	Yes	n 99 5 104						
	% within PES use	24.6% 10.0% 23.0%						

*Fisher's Exact Test

Conclusions

Reported use of PES, varies significantly according to gender, education, occupation, exercise profile and gym modality practice. Adult men who have a lower level of education, work, train frequently and have bodybuilding or other combat practice are more willing to experiment prohibited PES, than other categories of respondents. The information presented in this study highlights that gymnasia could provide an additional innovative setting for intervention and prevention efforts targeting PES use and could be of great importance to relevant stakeholders, in guiding prevention strategies based on educational campaigns about side effects and the promotion of regular health checks among users.

Conflict interest: The authors declare that they have no conflict of interest.

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