University of Hertfordshire

‘Hooked on the mirror’: the emergence of a new cohort of gym users affected by exercise addiction, appearance anxiety and the use of fitness supplements

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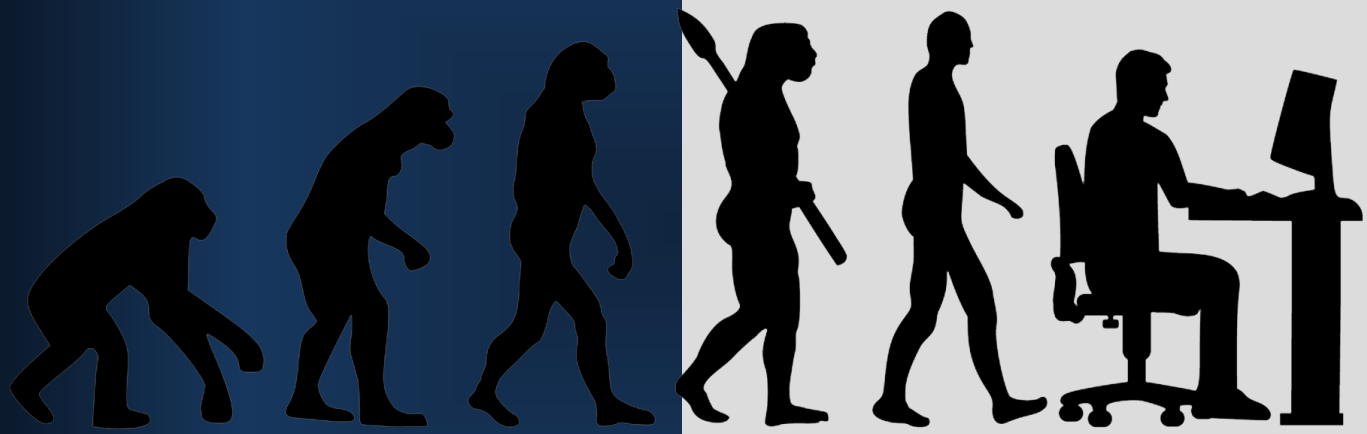
Net&Me INTERNET AND ME

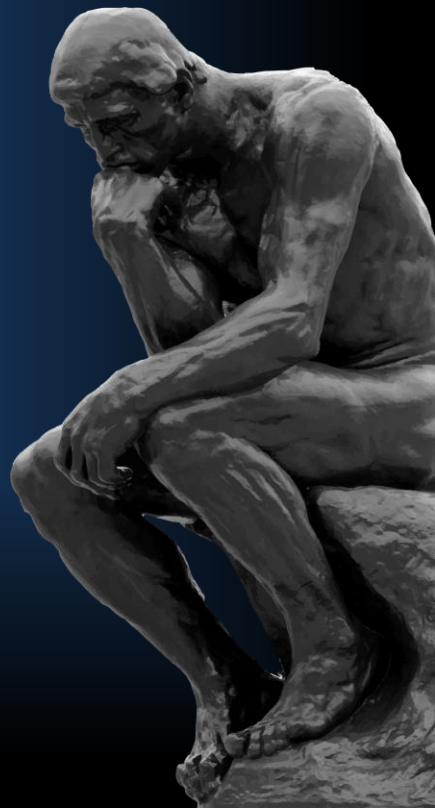
cost EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY



“Frenetic lifestyles, rapid form of transport and communication, allow us to transcend what used to be natural limits of our body and to live our everyday life as a pure ‘mental experience” (Corazza 2008)

“I *think* therefore I am”

“I am *seen* therefore I am”



"The pain you feel today will be the strength you feel tomorrow", "No pain, no gain"

Fitspiration, a word that combines "fitness" and "inspiration", has become a new trend in society, with millions of texts and images posted on social networking promoting a visual representation of a 'fit' or perfect 'body'

What is Exercise Addiction (EA)?

- EA is a behavioural addiction, similar to gambling, but due to the lack of sustained and rigorous evidence, is NOT listed as a mental disorder in the DSM-5.

- According to Veale (1995) the main characteristics are:

(1) preoccupation with exercise that has become stereotyped and routine;
(2) significant withdrawal symptoms in the absence of exercise (e.g. mood swings, irritability and insomnia);
(3) preoccupation that causes clinically significant distress or impairment in physical, social, occupational or other areas of functioning;
(4) preoccupation with exercise that is not better accounted for by another mental disorder (e.g. means of losing weight or controlling calorie intake)

EA found between 0.3% and 0.5% among the general adult population (Mónok et al., 2012), and between 3.0% and 6.0% among athletes or **regular exercisers** (Szabo et al., 2016).

It might may reach over 20% in elite **endurance athletes,** such those participating in triathlon and/or ironman races (Blaydon & Lindner, 2002; Youngman & Simpson, 2014). Studies suggest that men generally show higher scores in EA than women.

This represents a fertile ground not only for the objectification of the human body but also for the *development of behavioural addictions*

What is Body Dysmorphic Disorder (BDD)?

- **BDD is a severe disorder** characterized by distressing **preoccupation with perceived imperfections in one's physical appearance** and time-consuming **rituals** (e.g., excessive mirror checking, cosmetic surgery) aimed at checking, hiding, or fixing "flaws"

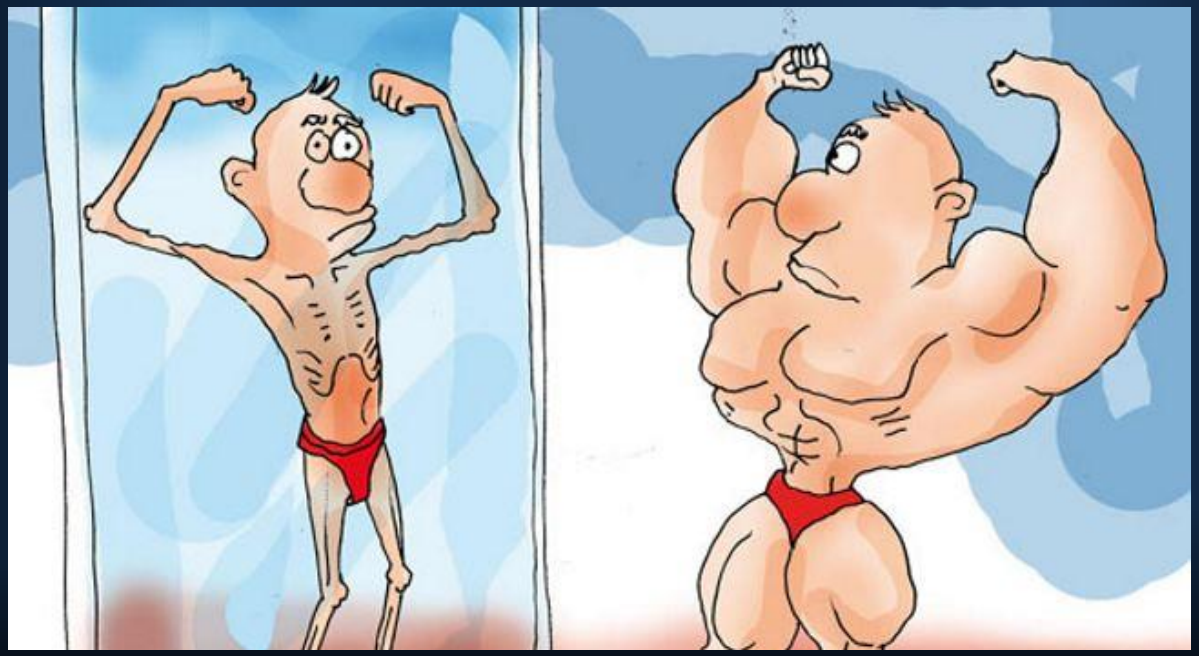
- Those affected can spend 3-8 hours every day thinking of their appearance (Phillips , 2004). Often these concerns focus on elements in face or head such as the skin (scars, skin color, wrinkles, etc) hair, nose (shape or size) (Gupta and Gupta, 1996)

- BDD has similarities to OCD and it is **classified as an obsessive-compulsive and related disorder** in the DSM-5.
- Although OCD and BDD share many similaities, they also have important differences, such as poorer insight and more frequent **comorbidity with depression and substance use disorders in BDD**

- Most studies report a higher prevalence in women, although men are also affected

What is Muscle Dysmorphia (MD)?

MD is a condition in which the principal symptom is a marked preoccupation with one's body being insufficiently muscular. In the DSM-5, it is classified as a subtype of BDD

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TOWARDS A ‘DOPING SOCIETY’?

Once limited to elite sports, PIEDS are increasingly been used by what I would like to call the “doping society”, *or a society which uses substances to cope with rapid changes in their lifestyles and the surrounding environments.*

Vulnerable individuals, especially those who are unhappy about the way they look, or perform, are primary customers for these products. They aspire to improve their minds and bodies *sacrifying sometimes their own health*.


Handbook of
Novel Psychoactive Substances
What Clinicians Should Know about NPS
Ornella Corazza and Andres Roman-Urrestarazu
Novel Psychoactive Substances
Policy, Economics and Drug Regulation
Ornella Corazza
Andres Roman-Urrestarazu
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Hindawi Publishing Corporation
BioMed Research International
Article ID 120679

PLOS ONE

RESEARCH ARTICLE

The emergence of Exercise Addiction, Body Dysmorphic Disorder, and other image-related psychopathological correlates in fitness settings: A cross sectional study

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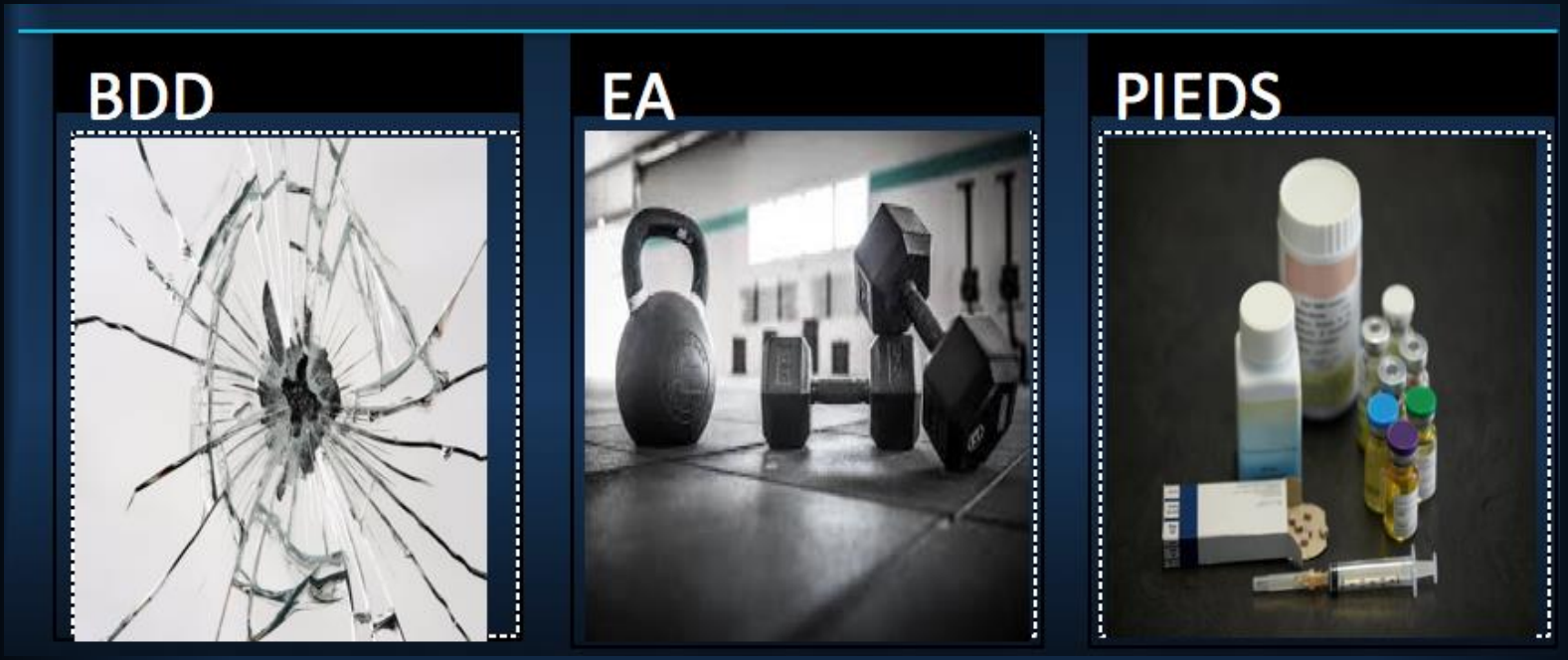
AIM

To investigate whether there is a potential link between image perception, exercise addiction and the use of PIEDS



METHODS

- Online survey, targeting people who regularly engage in fitness. Recruitment was supported via a dedicated project website (https://humanenhancementdrugs.com) and adverts on fitness blogs and other social media platforms

- Measures being used investigated
  - Demographics
  - PIEDS use and knowledge
  - Exercise Addiction (Exercise Addiction Inventory; EAI)
  - Body Image Perception (Anxiety Appearance Index; AAI)
  - Self-Esteem (Rosenberg's Self Esteem Scale; RSE)

- The study was approved by the Ethics Committee Ethical at University of Hertfordshire prior to data collection (HSK/SF/UH/00104).

Sample	1711 UK (377) Netherlands (189) Italy (494) Hungary (651)
Sex	66.3 % F 33.7% M
Mean Age	30.17 ± 10.26
Occupation	63.6% Employed 29% Student 5.3% Unemployed 1.3% Retired

Type of activity	
Walking	53.3%
Running	79.2%
Bodyweight	28.7%
Lift weights	27.2%
Swimming	19.6%
Hiking	12.8%
Gymnastics	11.3%
Football	8.9%
Yoga	8.7%

Exercise Addiction

- **EA was detected in 11.7%** of the overall sample, considering the cut-off score of 24 points in the EAI.

- This was **higher amongst male (15%)**, indicating a greater exposure to physical injuries and withdrawal symptoms, like depression, anxiety and mood swings.

Body Dysmorphic Disorder (BDD)

- Participants were also very **concerned about their physical appearance with 38.5% at risk of BDD,** considering a cut-off score of 19 in the AAI.

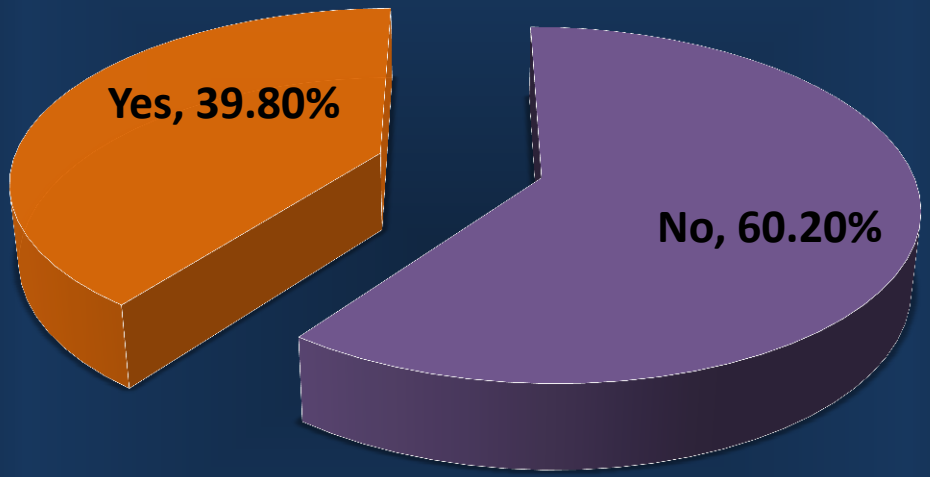
- This mainly affected the **mainly female (47.2%).** This result was much higher not only than the scores reported among the general population (where BBD prevalence ranges from 0.7% to 2.3%), but also of those found among at risk populations (6.7% among general dermatology patients, 14.0% among cosmetic dermatology patients, 10% in the maxillofacial setting, and 21% in patients seeking rhinoplasty (Bouman et al., 2017, Brito et al., 2016, Locatelli et al., 2017).

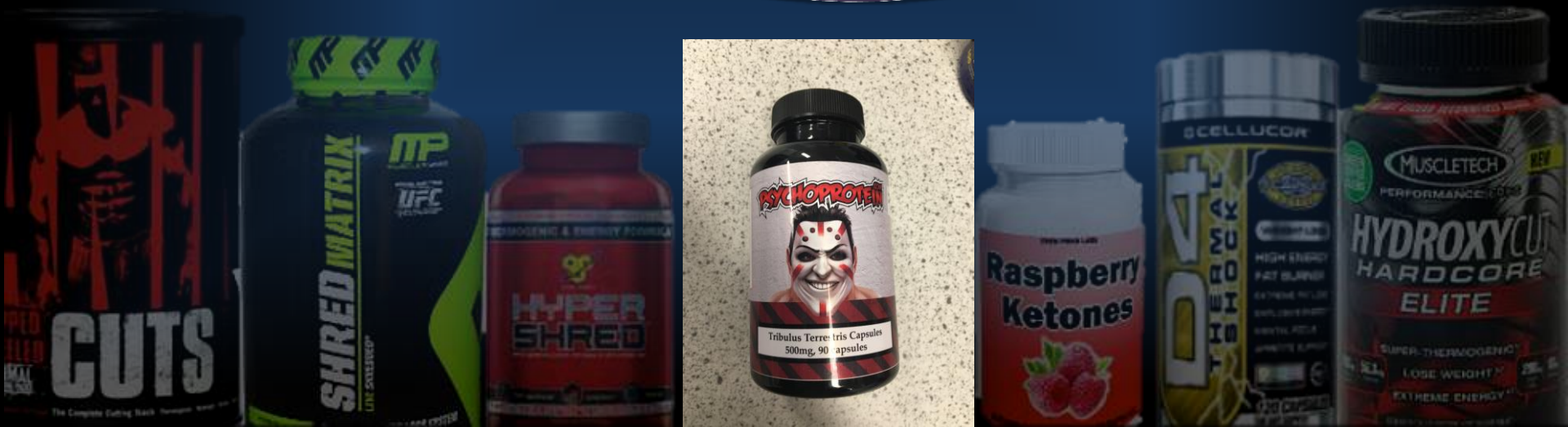
EAI and AAI in the four countries

Table 3. Exercise Addiction Inventory (EAI) and Appearance Anxiety Inventory (AAI) results per country

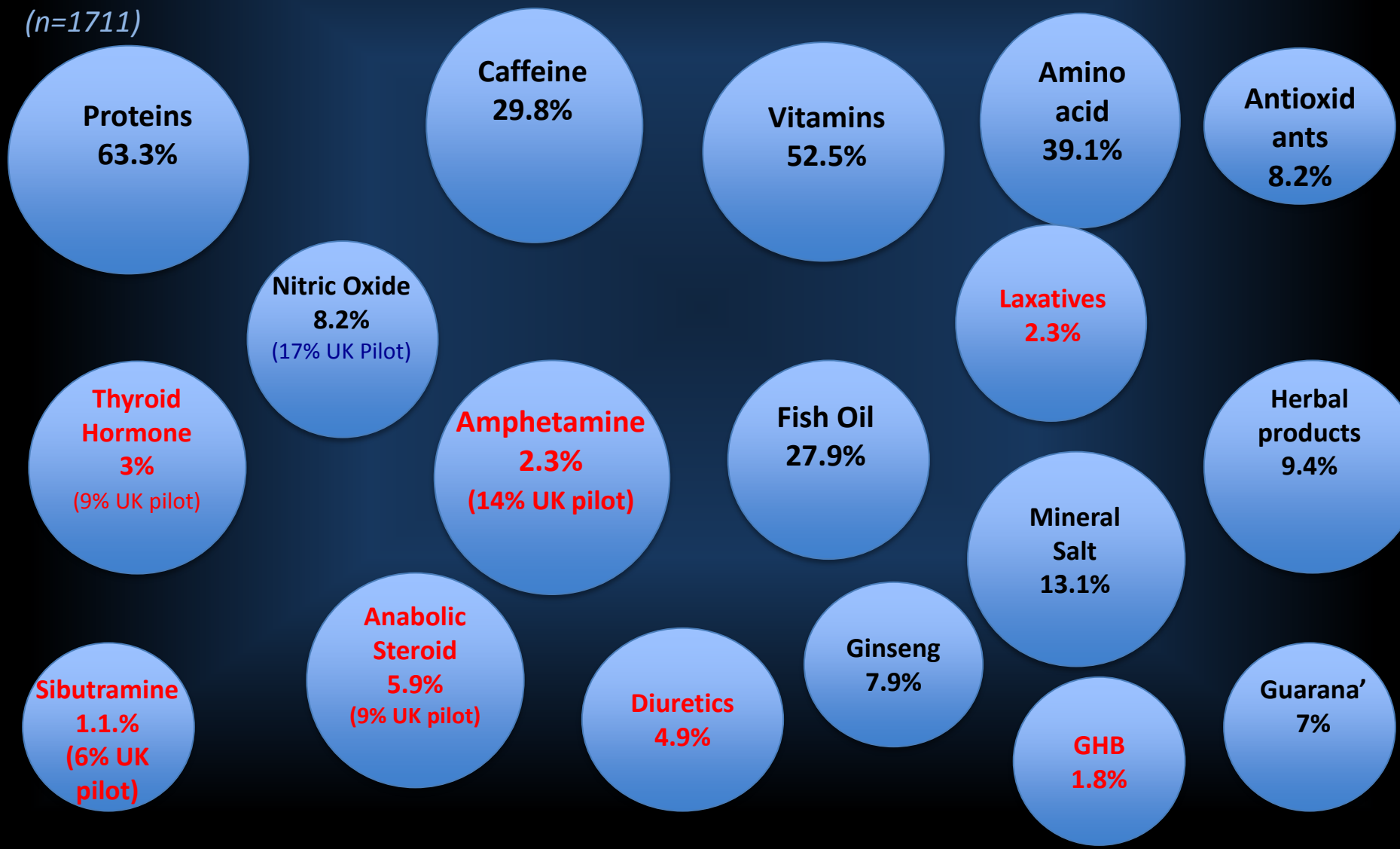
	Netherlands	Hungary	UK	Italy	
EAI over cut-off (scored over 24)	20.9%	9.3%	16.1%	7.9%	X=31.53 p<0.001
AAI over cut-off (scored over 19)	38.1%	51.5%	30.0%	29.5%	X=64.29 p<0.001

DISCLOSING THE USE OF PRODUCTS TO INCREASE FITNESS PERFORMANCE





VARIETY OF PRODUCTS BEING USED



Side effects

- No previous medical advise
- 8% of the sample reported side-effects from taking products, including:

Headaches

Mood Swings

Depression

Hair Loss

Acne

Heart Palpitations

Diarrhea

Difficulties Sleeping

High BP

HOW DID YOU FIND OUT ABOUT THESE PRODUCTS?

Friends	Family	Personal Trainer	Medical Prof.	Magazine	Online	Other
18.9%	3.7%	14.6%	4.5%	10.5%	41.4%	6.3%

WHERE DID YOU PURCHASE THE PRODUCTS FROM?

Pharmacy	Food Store	Fitness Shop	Online	Other
8.3%	3.8%	48.6%	31.3%	8.0%

Table 2. Exercise Addiction Inventory (EAI), Appearance Anxiety Inventory (AAI), Rosenberg Self-Esteem (RSE) scores and use of fitness supplements with specification of gender differences

	Sample	Male	Female		Over Cut Off		
EAI	m=18.51±4.2	m=18.44±4.38	m=18.65±3.97	n.s.	**11.7% (n=191)**	Male=81 (15%) Female=110 (10%)	$\chi2$=8.25 p<0.001
AAI	m=18.14±5.7	m=18.07±5.87	m=18.28±5.58	n.s.	**38.5% (n=577)**	Male=108 (21.4%) Female= 468 (47.2%)	$\chi2$=93.87 p<0.001
RSE	m=12.33±2.48	m=12.19±2.53	m=12.58±2.37	f=8.86 p<0.001			
Fitness supplements	Yes 39.8% (n=657)	Yes 51.3%	Yes 34.2%	$\chi2$=44.47 p<0.001	Note: Results seem influenced by country		Hungary Yes 52.3% (n=332) $\chi2$= 155 p<0.001

Note: m= mean; $\chi2$ = chi square; f= ANOVA

Users vs Non Users

- Respondents who declared the use of fitness supplements **scored significantly higher (p<0.001) in both the Appearance Anxiety Inventory and the Exercise Addiction Inventory** with an average score of m=19.62 in the Exercise Addiction Inventory, m=18.91 in the Appearance Anxiety Inventory scale and m=12.27 in the Rosenberg Self-Esteem scale.

- However, no significant difference was recorded in the Rosenberg Self-Esteem scale.

Table 4. Fitness supplements users vs non-users: differences considering to Exercise Addiction Inventory, Appearance Anxiety Inventory, Rosenberg Self-Esteem and their country

	Users (n=657)	Non Users	
EAI	m=19.62±4.24	m=17.78±4.24	f=75.89; p<0.001
AAI	m=18.91±5.88	m=17.63±5.62	f=17.99 p<0.001
RSE	m=12.27±2.52	m=12.38±2.44	n.s.
Hungary	52.3%	χ^2= 155 p<0.001	
Netherlands	52.2%		
UK	41.3%		
Italy	16.9%		

EA, BDD and PIEDs use

Three different logistic models were created according to the gender of participants

1. Across the whole sample**, EA emerged as a strong predictor of the consumption of fitness supplements**. This risk appeared to be **over three times higher in those reporting Exercise Addiction Inventory scores over the cut-off** ($p<0.001$, **OR = 3.03** with a Confidence Interval (CI) ranging from 2.15 to 4.28.

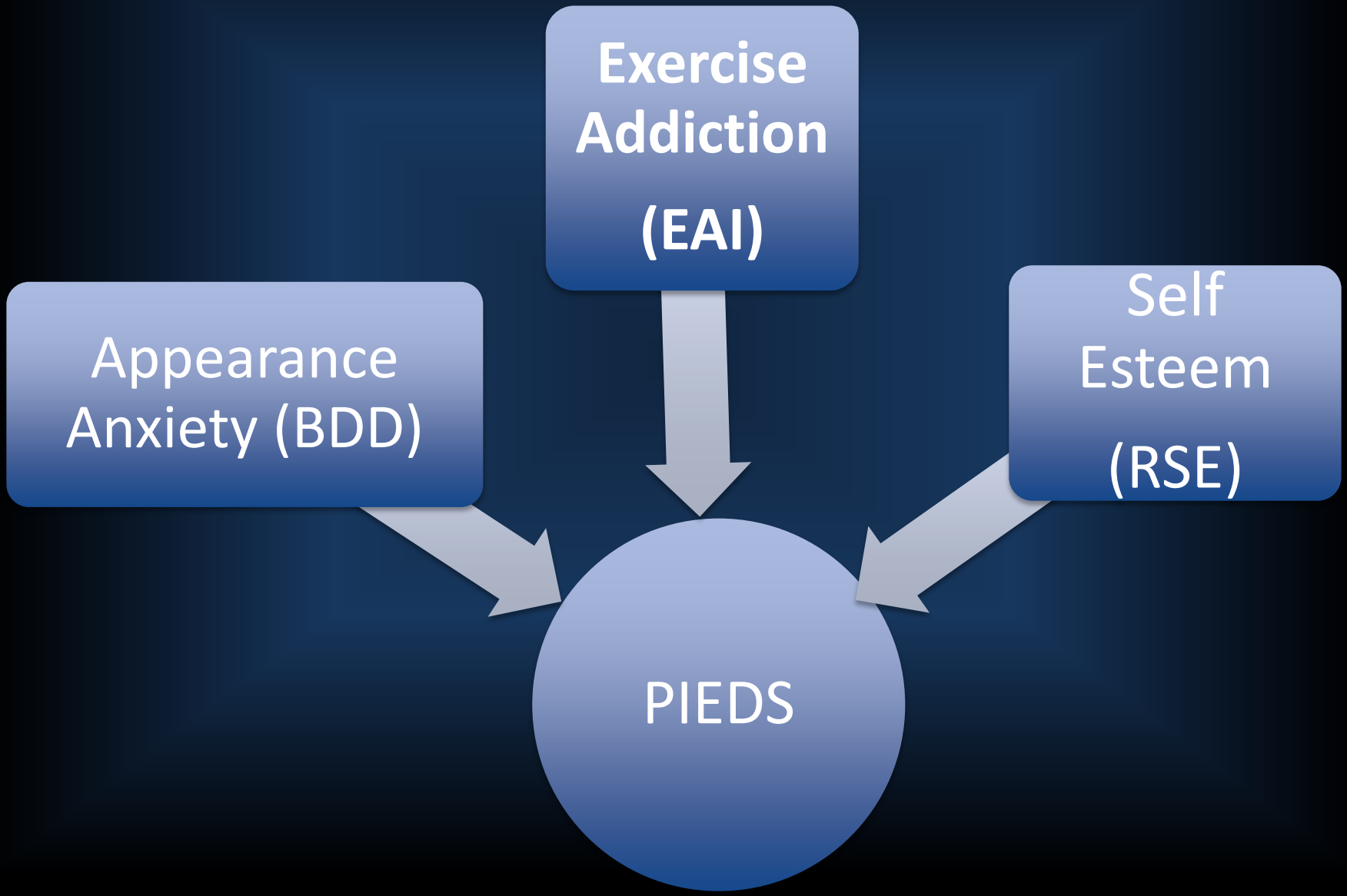
2. **The risk of using supplements was much higher in the male sample reporting Exercise Addiction Inventory score over the clinical cut-off** (OR = 3.25, CI 1.81-5.86). In those cases where EA was identified, the risk of using sport supplements was over five times higher, **making EA the strongest predictor for this group.**

3. Other psychopathological factors were the major predictor of supplement use among female: **Appearance Anxiety (OR = 1.5; CI 1.20-2.12) and low self-esteem as measured by the Rosenberg Self-Esteem scale (OR = 1.08; CI 1.02-1.15).**

Table 6. Logistic regression models with specification of gender

		B	ES	Wald	df	Sig	Odds Ratio (OR)	Confidence Interval (CI)	
								Min	Max
Model I: fitness supplements (whole sample)	Age	.000	.006	.000	1	.989	1.000	.989	1.011
	RSE total	.030	.023	1.796	1	.180	1.031	.986	1.078
	EA over the Cut Off (1)	**1.111**	**.175**	**40.061**	**1**	**.000**	**3.037**	**2.153**	**4.283**
	AAI over the Cut off (1)	.243	.116	4.352	1	.037	1.275	1.015	1.602
	Constant	1.118	.362	9.526	1	.002	.327		
Model II: fitness supplements (male)	Age	.010	.009	1.167	1	.280	1.010	.992	1.027
	RSE total	-.073	.037	3.810	1	.051	.930	.864	1.000
	EA over the Cut Off (1)	**1.182**	**.300**	**15.508**	**1**	**.000**	**3.259**	**1.810**	**5.868**
	AAI over the Cut off (1)	.455	.240	3.592	1	.058	1.577	.985	2.525
	Constant	-.852	.608	1.963	1	.161	.427		
Model III: fitness supplements (female)									
	Age	-.006	.008	.596	1	.440	.994	.980	1.009
	RSE total	**.083**	**.030**	**7.827**	**1**	**.005**	**1.087**	**1.025**	**1.152**
	EA over the Cut Off (1)	**.918**	**.226**	**16.541**	**1**	**.000**	**2.504**	**1.609**	**3.898**
	AAI over the Cut off (1)	**.469**	**.145**	**10.389**	**1**	**.001**	**1.598**	**1.202**	**2.125**
	Constant	1.297	.466	7.740	1	.005	.273		

BEHIND THE SURFACE:
USE OF PIEDS AND UNDERLYING PSCHOPATHOLOGIES



Conclusions

- The study revealed **for the first time an association between the consumption of fitness supplements and the level of EA across sample, suggesting a predictability of use .**
- Although preliminary, these findings indicate that intake of fitness enhancing products could be **motivated by such underlying psychopathological and image-disturbance features.**
- The statistical significance of **EA** was particularly high for **males**, where the risk of fitness supplements intake was from 1.8 to 5.8 times higher than that reported among females (Table 6).
- Conversely, the substance intake by the **female group** was more influenced by **appearance anxiety and self-esteem.**
- **Need to develop more suitable and up to date rating scales.**

Limitations

Although Keep Fit made a significant contribution to the field, authors remain aware of the study limitations, which can be summarised as follows:

(a) the assessment of a non-stratified population with different recruitment procedures among countries

(b) the absence of a structured psychiatric interview able to assess the emerged underlined pathologies;

(c) the use of fitness products was self-reported and not validated by any biological testing;

(a) the lack of information on the frequency and duration of the exercise and use of fitness products.

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To grow up healthy, children need to sit less and play more

New WHO guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age

24 April 2019 | News release | Geneva

World Health Organization

ries News Emergencies

Global Strategy on Diet, Physical Activity and Health

Physical Activity and Adults

Recommended levels of physical activity for adults aged 18 - 64 years

In adults aged 18–64, physical activity includes leisure time physical activity (for example: walking, dancing, gardening, hiking, swimming), transportation (e.g. walking or cycling), occupational (i.e. work), household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities. In order to improve cardiorespiratory and muscular fitness, bone health, reduce the risk of NCDs and depression:

Photo: V. Collazos

1. Adults aged 18–64 should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity.
2. Aerobic activity should be performed in bouts of at least 10 minutes duration.
3. For additional health benefits, adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous-intensity activity.
4. Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.

Thanks for your attention!

KEEP FIT STUDY

UK	Italy	Hungary	Netherlands
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Keith Sullivan	Eduardo Cinosi	Máté Kapitány	Alvin Westmaas
Liam Blackwell	Rita Santacroce	Zsolt Demetrovics	
David Wellsted	Giulia Piazzon	Balázs Varga	
Andres Roman-Urrestarazu	Fabiola Sarchione		

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