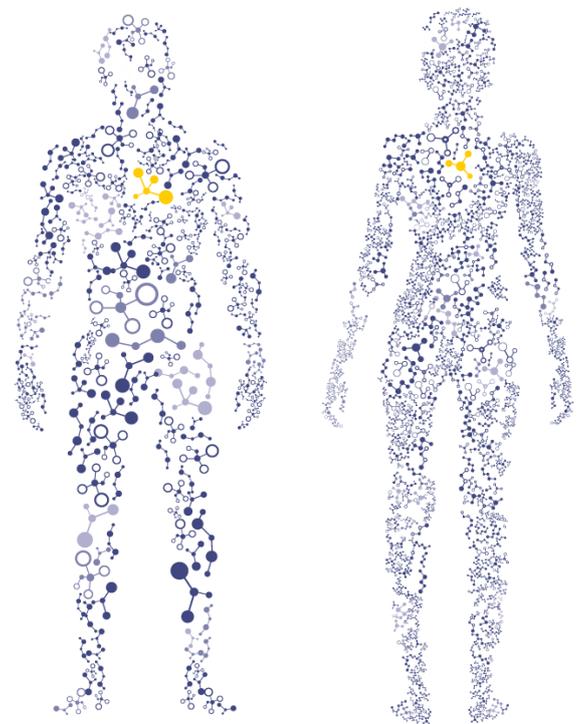


Recreational athletes' use of performance enhancing substances. Results from the first European Randomized Response Technique survey.



Recreational athletes' use of performance enhancing substances.

Results from the first European Randomized Response Technique survey.

Executive summary

Ask Vest Christiansen¹, Monika Frenger², Andrea Chirico³, Werner Pitsch²

1: Aarhus University, Denmark

2: Saarland University, Germany

3: Sapienza University, Italy

Background

Measuring prevalence of doping is notoriously difficult. Being publicly disapproved doping is mostly concealed behaviour. Therefore, people who do dope will often not respond honestly when asked if they are – even when guaranteed anonymity. In elite sports, there are basically four ways to estimate doping prevalence: 1) anti-doping tests in and out of competition, 2) official investigations (governmental, police, other), 3) accounts from for instance athletes and journalists, and 4) surveys and questionnaires. Later years has added a potential fifth approach, namely wastewater analysis. Estimating doping prevalence only becomes more difficult when attending to populations of recreational athletes, as the first three options are largely redundant, leaving researchers with the survey/questionnaire option and potentially wastewater analysis. It is thus not surprising that only few studies have investigated recreational athletes' use of performance enhancing drugs.

The present research extends from a previous study that had the objective to “review the existing doping prevention interventions [...] which are aimed at sports people, and report on good practices” (Christiansen, Bloodworth, Ham, & Cox, 2020, p. 24). Here, the researchers surveyed all EU's 28-member state's National Anti-Doping Organisations (NADOs) charged with anti-doping in recreational sport on their assessment of successful interventions. A central conclusion was that very little is known about what strategies are effective in preventing doping in recreational sport, as there “is very limited research on the doping problem in competitive recreational sport”, and because “we do not yet have a good understanding of prevalence in various recreational sports” (Christiansen et al., 2020, p. 61).

Prompted hereby, the present study aimed to assess the use of doping among recreational athletes in Europe. More specifically, the study aim was to examine the prevalence of doping in recreational sport in eight European countries through indirect questioning by using the Randomized Response Technique (RRT). RRT is useful in self-report surveys asking sensitive questions where social desirability bias can be expected to distort the reports.

For this study, sensitive questions were asked for a) the use of over-the-counter medications for performance enhancement, b) the use of medication for purposes other than performance enhancement, and c) for the use prohibited substances for performance enhancement.

Terminology

When measuring “doping in recreational sport” there is a fundamental problem with the vague concepts employed. As regards “doping”, we opted for a social scientific rather than a legal or theoretical approach to the definition. When we inquired about doping, it was thus the respondents’ understanding that was at the fore, not the legal definition of the term used by the World Anti-Doping Agency (WADA), or a theoretical definition stipulated by the researchers. The survey asked explicitly about the use of substances that the respondent believed to be prohibited in their sport. The survey’s social scientific approach thus measures doping in the intentional or moral sense (doping behaviour), rather than doping in the legal or judicial sense. The prevalence results therefore reflect European recreational athletes’ own understanding of doping and not actual anti-doping rule violations, ADRV’s, as stipulated by WADA.

Literature review

In the literature review we found only three studies that had measured on prevalence in somewhat similar ways. However, these three either concerned a specific country, a specific age group or focused on methodological comparisons. We therefore believe the present study is the first ever to survey the use of doping and performance enhancing drugs in recreational sport in a larger multi-national region.

Methods and Design

Randomized Response Technique

Because the doping issue is sensitive and admitting to use can be embarrassing, the survey used the randomized response technique (RRT) for questions on doping and use of medication. The rationale for this was twofold. First, using RRT ensures comparability of the results with other doping surveys in recreational sport and in elite sport. Second, the RRT has shown to generate more reliable responses than those obtained by direct questioning. The primary reason for this is that the RRT reduces social desirability bias, i.e., the tendency of survey respondents to answer questions in a manner that will be viewed more favourable by others.

Survey questions and dissemination

The original idea was to make a point prevalence measurement of doping in recreational sport in Europe in the autumn of 2020. However, as most sports were shut down during the COVID-19 pandemic, we could not ask respondents about their current behaviour. We ended up running the survey in the spring of 2021 and inquire respondents about their behaviour in 2019. Obviously, this significantly increased the risk of recall bias, but due to time limitations of the study period, we had to accept this.

To have an even spread of northern, central, and southern Europe in the sample, eight European countries were included in the survey: Norway, Denmark, United Kingdom, Germany, Spain, Italy, Greece, and Cyprus.

The survey was primarily disseminated via snowball sampling using social media platforms. We engaged student assistants to disseminate the survey. Each responsible for their own country.

Results

In total, 17,324 clicks on the link to the survey were registered. There were 8,146 records with data, of which 7,260 were from respondents reporting to be recreational athletes. However, as athletes were asked for more than one sport that were assessed independently, 9,562 records, covering 208 sports, were obtained. After data quality control, the final number of records to be analysed was 9,365. As respondents were asked for their doping behaviour in up to two sports, 6,167 records addressing doping behaviour were obtained.

When calculating our results based on these figures, we applied weighted statistics. This was to correct for the bias in the number of records per country, gender, and age.

As the number of records were insufficient to calculate results for individual sports, the 208 sports were categorized into four categories aligned with the so-called vulnerability thesis for doping: “Artistic sports” (e.g., dance and gymnastics), “Combat sports” (e.g., judo, karate, boxing), “Games” (e.g., football, tennis, volleyball), “CGS-sports” (i.e., sports measured in centimetres, grams, and seconds, e.g., athletics, cycling, swimming,) and the residual category, “Other”.

In the first two RRT question respondents were asked for the use of a) over-the-counter medications to enhance sporting performance and b) use medication for training or for competition for purposes other than performance enhancement.

We found that approximately 10 percent of the population indicated to be using over-the-counter medication for performance enhancement, while 44 percent reported the use of medication for training or competition for purposes other than performance enhancement.

The central doping question of the survey was “did you knowingly use prohibited substances or methods to enhance your sporting performance in 2019?” This question addressed the prevalence of dopers. Note, that a doper in this context is a person that intentionally uses prohibited substances. We found a prevalence of 0.4 percent dopers among respondents. Differentiating between females and males nuances the picture slightly. Whereas there were an insignificant number of female dopers, we found 3.1 percent of male dopers.

Shifting the perspective from individuals to sports, gives a slightly different picture, as we then look for the prevalence of doping in each sport or sports category. Overall, we found a prevalence of 1.6 percent for all sports. While Combat sport had too few records to be calculated, the prevalence for Artistic sports and CGS sports did not differ significantly from the overall prevalence of 1.6%. Only for the category of Games did we find a higher prevalence of approximately 7 percent. However, because of statistical uncertainty this figure must be interpreted with caution.



Survey method

Indirect questioning (RRT) is used to reduce social desirability bias.

Overall visitors

17,324

during May-July 2021,
27.8% drop-out



Sample

Northern, Central &
Southern Europe

respondents by country



Prevalence of doping

~1.6%

in recreational sport

Prevalence of over-the-counter medication for performance enhancement



Use of medicine

45 out of 100

for other reasons than performance enhancement.

"Dopers are men - not women"



Competition

explains doping better than
category of sports



Doping research in recreational sport needs its own tailored approach

Conclusions

This study used indirect questioning technique, RRT, to assess the prevalence of sport-induced medicine use and the use of performance enhancing substance among European recreational athletes in 2019. Ten percent of respondents reported use of over-the-counter medications for performance enhancement, whereas almost 45% indicated to use medicine for other reasons than performance enhancement when playing sports. We distinguished between “doping”, as the use of prohibited substances in a given sport, and “dopers”, as designating individuals intentionally using prohibited substances. While we found an overall prevalence of 0.4% dopers, we saw 3.1% male and zero percent female dopers when distinguishing between the sexes. Looking at sports rather than individuals, showed an overall doping prevalence of 1.6%. Of the four sports categories Games was the only one with a higher prevalence than the overall category. Additionally, the differences in organisational and competitive structure in recreational- and elite sport, expose that the applied sports categories have different content, meaning and relevance in recreational sport when contrasted with elite sport. Consequently, the vulnerability thesis has less explanatory power in recreational sport than it has in elite sport. Therefore, to come to a better understanding of the phenomenon, doping in recreational sport deserves its own research approaches.

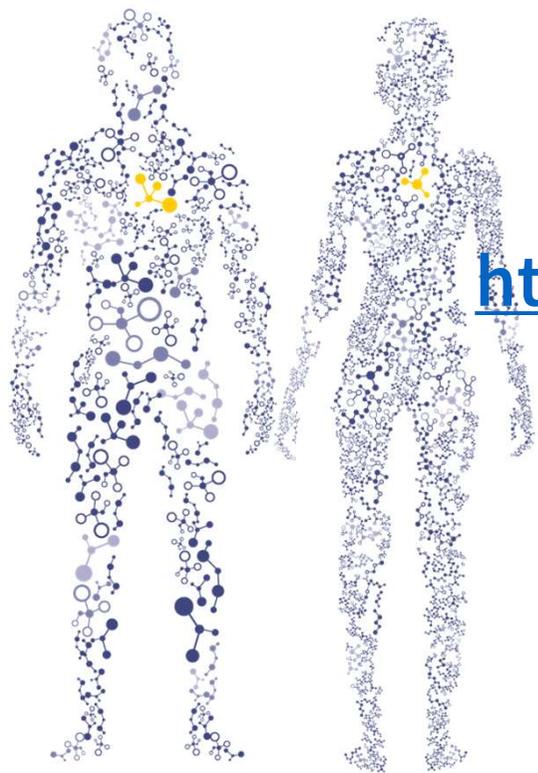
Reference

Christiansen, A. V., Bloodworth, A., Ham, E., & Cox, L. (2020). Doping prevention in recreational sport in Europe—a study on emerging practices among European stakeholders, Chapter 3 FAIR Final report. Retrieved from <https://www.europeactive-euaffairs.eu/projects/FAIR>

Disclaimer

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Question pages of the FAIR+ survey



For more information, see:
<https://fp.socioeconomy.eu/index.php>

Survey on the use of medication in recreational sport for the year 2019

In this survey, we inquire about your use of medication in recreational sport in 2019. Since many sports and events were closed or cancelled in 2020 and early 2021, we focus on 2019.

The survey is intended for people 16 years and older who play sports recreationally, and who are not professional or elite athletes. We invite participants from all sports to participate.

As we use a special survey technique, we ask you to read the questions and follow the instructions carefully. We do this to safeguard your anonymity and ensure that you can answer honestly, even if you think the question or a truthful answer is embarrassing. You can find more information on the survey technique [here](#).

Please complete the whole survey. It will only take approximately 10 minutes. Thank you for your kind participation.

In case of any questions, please contact your national academic partner for Great Britain, [Dr. Paul Dimeo](#)

[I want to Start the survey](#)

--- change language ▾



[Goals of the survey](#)



[Legal note](#)



[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

Personal details

<i>Which of the following most accurately describes you?</i>	male ▾
<i>When were you born?</i>	1970 ... 1974 ▾
<i>In which country did you live in 2019?</i>	Denmark ▾
<i>What is the highest level of education that you have reached?</i>	doctorate ▾

back

next



[Goals of the survey](#)



[Legal note](#)



[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

My sports

Please indicate the sports you practised in 2019 as a recreational athlete.

Sport	in a sports club	Period	Level of competition in 2019
<input type="text" value="Football"/>	yes <input checked="" type="radio"/> no <input type="radio"/>	since 1992 ▾	regional level ▾
<input type="text" value="Cycling"/>	yes <input type="radio"/> no <input checked="" type="radio"/>	since 2007 ▾	local level ▾
<input type="text" value="please enter your spor"/>	yes <input type="radio"/> no <input type="radio"/>	since --- please select ▾	--- please choose ▾
<input type="text" value="please enter your spor"/>	yes <input type="radio"/> no <input type="radio"/>	since --- please select ▾	--- please choose ▾

back



[Goals of the survey](#)

next



[Legal note](#)



[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

Instructions to answer the following questions

To answer the following questions, you will need a 5-digit random number.

We will refer to different digits of the random number in the questions that follow.

Please choose **only one** of the following randomly generated numbers.

- 21948
- 89151
- 77532
- 67602
- 17216

As we cannot know which number you chose, your answers on the next pages will be perfectly anonymous.

You may choose to preserve your number until you finish the survey or to delete it. If you select "delete", please write down your chosen number or copy it, so you have it available.

It is important that you will **stick to the same number** throughout the survey.

back

[Notes on answering the questions](#)

preserve numbers and proceed
delete numbers and proceed



[Goals of the survey](#)



[Legal note](#)



[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

	<i>If the first digit of your random number is</i>	
*	<i>a 1, 2, or a 3 please answer the question on the right side,</i>	
*	<i>a 4 or a 5 please answer the question on the left side,</i>	
*	<i>otherwise please answer the question in the middle.</i>	
	Show random numbers	

Does every week have 9 days?

In 2019, did you use over-the-counter medications to enhance your sporting performance?

Does every week have 7 days?

Answer: Yes No

[back](#)

[Notes on answering the questions](#)

[next](#)



[Goals of the survey](#)



[Legal note](#)



[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

	<i>If the third digit of your random number is</i>	
*	<i>a 1 please answer the question on the right side,</i>	
*	<i>a 2 or a 3 please answer the question on the left side,</i>	
*	<i>otherwise please answer the question in the middle.</i>	
	Show random numbers	

Does every week have 9 days?

In 2019, did you use medication for training or for competition for purposes other than performance enhancement (e.g. for pain relief, injury recovery, or to control sleep, mood or menstrual cycle)?

Does every week have 7 days?

Answer: Yes No

[back](#)

[Notes on answering the questions](#)

[next](#)



[Goals of the survey](#)



[Legal note](#)



[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

	<i>If the last digit of your random number is</i>	
*	<i>a 1, 2, or a 3 please answer the question on the right side,</i>	
*	<i>a 4 or a 5 please answer the question on the left side,</i>	
*	<i>otherwise please answer the question in the middle.</i>	
	Show random numbers	

Does every week have 9 days?

When participating in **football in 2019**, did you **knowingly use prohibited substances or methods** to enhance your sporting performance?

Does every week have 7 days?

Answer: Yes No

[back](#)

[Notes on answering the questions](#)

[next](#)



[Goals of the survey](#)



[Legal note](#)



[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

	<i>If the second digit of your random number is</i>	
*	<i>a 1 please answer the question on the right side,</i>	
*	<i>a 2 or a 3 please answer the question on the left side,</i>	
*	<i>otherwise please answer the question in the middle.</i>	
	Show random numbers	

Does every week
have 9 days?

When participating in **cycling in 2019** did you **knowingly use prohibited substances or methods** to enhance your sporting performance?

Does every week
have 7 days?

Answer: Yes No

back

[Notes on answering the questions](#)

next



[Goals of the survey](#)



[Legal note](#)



[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

	<i>If the second to last digit of your random number is</i>	
*	<i>a 1 please answer the question on the right side,</i>	
*	<i>a 2 or a 3 please answer the question on the left side,</i>	
*	<i>otherwise please answer the question in the middle.</i>	
	Show random numbers	

Does every week have 9 days?

In 2019, did you knowingly use prohibited substances or methods to enhance your **image?**

Does every week have 7 days?

Answer: Yes No

[back](#)

[Notes on answering the questions](#)

[next](#)



[Goals of the survey](#)



[Legal note](#)



[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

Views on medication use in recreational sports

How many recreational athletes in football do you think use prohibited substances or methods to enhance their performance? (range 0-100%)	<input type="text" value="5"/>	%
How many recreational athletes in cycling do you think use prohibited substances or methods to enhance their performance? (range 0-100%)	<input type="text" value="6"/>	%
In all recreational sport how many (amateur) sports people in your country do you believe use prohibited substances or methods to enhance their performance or their image? (range 0-100%)	<input type="text" value="7"/>	%

[back](#)[Goals of the survey](#)[Legal note](#)[next](#)[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

Recreational sportspeople have different views about the use of prohibited performance and image enhancing substances in sport. Listed below are several statements describing some.

Read these statements carefully and tick the box to indicate the extent to which you agree with each:

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
Compared to the damaging effects of alcohol and tobacco, using prohibited performance and image enhancing substances is not so bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is not right to condemn those who use prohibited performance and image enhancing substances to improve their body or their performance, since many do the same	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using prohibited performance and image enhancing substances is a way to "maximize" your sporting potential	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is no reason to punish those who use prohibited performance and image enhancing substances to improve their physical appearance, after all, they do not hurt anyone else	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Those who use prohibited performance and image enhancing substances should not be blamed, but those who expect too much from them should	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is ok to use prohibited performance and image enhancing substances if this can help to overcome personal limits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

back



[Goals of the survey](#)

next



[Legal note](#)



[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

Here are some characteristics that may be used to describe a person:

caring	compassionate	fair	friendly	generous
hardworking	helpful	honest	kind	

The person with these characteristics could describe you or someone else. For a moment, visualise in your mind the kind of athlete who in your opinion has these characteristics. Imagine how that person would think, feel, and act. When you have a clear image of what this athlete would be like, answer the following questions.

	Strongly Disagree	Disagree	Slightly disagree	Neutral	Slightly Agree	Agree	Strongly Agree
It would make me feel good to be a person who has these characteristics	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being a person who has these characteristics is an important part of who I am	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be ashamed to be a person who has these characteristics	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having these characteristics is not really important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I strongly would like to have these characteristics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

back



next



Survey on the use of medication in recreational sport for the year 2019

Below are some statements that refer to situations concerning use of prohibited medications to improve performance and image in sport.
For each statement, indicate to what extent you would be able to resist the temptation to use prohibited substances.

Regarding your sport, how confident are you in your ability to avoid using prohibited performance and image enhancing substances...

	Not at all confident 1	2	3	4	5	6	Completely confident 7
... despite the pressure to do so from others	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... to improve your image or performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... when pressured to do so by others (e.g., friends, coaches, trainers etc...)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
... to improve your image or performance, even if it will not have any adverse side-effects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
... to get results more quickly, even if no one would ever know	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

back



[Goals of the survey](#)



[Legal note](#)

next



[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

Read these statements carefully and tick the box to indicate the extent to which you agree with each:

	Strongly Disagree	Disagree	Slightly disagree	Slightly Agree	Agree	Strongly Agree
Legalising performance and image enhancing substances would be beneficial for sports.	<input type="radio"/>	<input checked="" type="radio"/>				
Prohibited performance and image enhancing substances are necessary in order to be competitive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The risks related to prohibited performance and image enhancing substances are exaggerated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Performance and image enhancing substances give the motivation to train and/or compete at the highest level.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recreational sports people should not feel guilty about breaking the rules by taking prohibited performance and image enhancing substances .	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recreational sports people are pressured to take prohibited performance and image enhancing substances.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

back



[Goals of the survey](#)

next



[Legal note](#)



[Data Protection](#)

Survey on the use of medication in recreational sport for the year 2019

Thank you very much

We would like to take this opportunity to thank you very much for the effort.
You helped us a lot with it!

We would be pleased if you would send the **link to this survey to as many active and former athletes as possible** as well as to **your friends and acquaintances who are active sports people**.

<https://fp-survey.eu?lang=en>

Thank you in advance.

We hope you continue to enjoy the sport, be it as an athlete or as a spectator!

The [FAIR+ Research consortium](#)