

Consequences of Lockdown and the COVID-19 Pandemic for a Selected Sport – Comparative Study

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Citation | Bejtkovský, J., & Snopek, P. (2021). Consequences of lockdown and the COVID-19 pandemic for a selected sport – Comparative study. *Adiktologie*, 21(3), 151–159. <https://doi.org/10.35198/01-2021-003-0002>

BACKGROUND: In December 2019, severe viral pneumonia caused by the new beta coronavirus appeared in China. It spread rapidly around the world and affected it greatly. In order to stop the global COVID-19 pandemic, the world was forced to adopt extensive social distancing and isolating policies, including lockdown. The measures also affected the sports and fitness sectors. **AIM:** The main objective of this comparative study was to determine whether there could be a relationship between potential interest in information retrieval and subsequent possible changes in preferences and behaviour regarding selected anabolic androgenic and steroid substances before and after the global COVID-19 pandemic in the context of attitudes towards religion and the monthly incomes of respondents in the Czech and Slovak Republics.

METHODS: The study used secondary and primary information sources. Secondary sources were obtained through the citation and reference database Scopus and the bibliographic and citation database Web of Science.

Selected mathematical-statistical methods were applied for the analysis and interpretation of primary sources.

SAMPLE: In this comparative study, a research sample of 127 respondents from the Czech Republic and 93 respondents from the Slovak Republic was used. The snowball method was implemented for data collection.

RESULTS: The results of the study showed that in the Czech respondents there is no statically significant relationship between changes in preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic and their attitude to religion, while in the Slovak respondents such a dependence does exist. **CONCLUSIONS:** Furthermore, it was found that the monthly incomes of the respondents do not affect their potential interest in information retrieval and subsequent possible changes in their preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic.

Keywords | Czech Republic – Fitness Centres – Global COVID-19 Pandemic – Selected Performance-Enhancing Anabolic Androgenic Substances and Steroids – Slovak Republic – Sport

Submitted | 6 August 2021

Accepted | 21 September 2021

Grant affiliation | This research was supported by the Internal Grant Agency of FaME Tomas Bata University in Zlín: RVO/2020: “Economic quantification of marketing processes that focus on value increase for a patient in the process of the creation of a system to measure and control efficiency in health facilities in the Czech Republic”.

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● 1 INTRODUCTION

As reported by Zu et al. (2020), in December 2019, the first cases of patients with severe viral pneumonia caused by a new beta coronavirus (coronavirus 2019, SARS-CoV-2 virus, 2019-nCoV, COVID-19) appeared in the Chinese city of Wuhan. The disease was later declared an international global pandemic by the World Health Organization on March 11, 2020.

Lu et al. (2020) and Pradhan et al. (2020) further state that the new beta coronavirus immediately spread throughout China from people living in or visiting Wuhan and then swept across the continent and around the world, consequently increasing global population morbidity.

Therefore, at the beginning of the global COVID-19 pandemic, but also later, almost all public events around the world were banned as they were deemed a possible source of risk of human-to-human transmission of SARS-CoV-2 (Moritz et al., 2021).

It is clear that various measures and restrictions to prevent the spread of the global COVID-19 pandemic have affected the functioning of the whole of society and subsequently the whole world. These measures and restrictions hit, *inter alia*, the sports sector, social events, and leisure activities (Lim, 2021; Lim & Pranata, 2021).

Lau et al. (2020) and Urbański et al. (2021) also recall in this context that in addition to the isolation of the population and the subsequent lockdown, there was a ban on mass events and a ban on the training of top or endurance athletes (elite athletes), as well as other athletes (recreational athletes).

Lockdown, population isolation, the ban on training, and, generally, a ban on the physical activity of the population resulting from the possibility of human-to-human transmission of 2019-nCoV have proved to have a negative impact not only on the mental state of the population but also on the performance and training routines of recreational and elite athletes (Andreato et al., 2020; Jagim et al., 2020).

Halabchi et al. (2020) and Lesser and Nienhuis (2020) and many others claim that the current goal of elite and recreational athletes is now, after the lockdown and isolation of the population have been lifted, to quickly regain their pre-pandemic form, quality sports performance, and results and competitiveness. However, this goal may not be easy to attain. Some athletes may have experienced (a) muscle loss, (b) decreased endurance, agility, activity, strength, and energy, (c) increased body fat and obesity, or (d) newly-emerged health problems, complications, or shortcomings.

Because of the above impacts of the global COVID-19 pandemic on active elite or endurance athletes, as well as other athletes, there may be a need to change their preferences and behaviour regarding performance-enhancing anabolic androgenic substances and steroids.

Kolliari-Turner et al. (2021) state that doping and the use of performance-enhancing anabolic androgenic substances and

steroids are not only threatening factors in sport, but also a debated problem of the Olympic Games.

Anabolic androgens and steroids are a group of chemical derivatives of the male hormone testosterone. Users of these substances apply them in cycles alternating with periods when the substances are not used. The standard duration of use of these substances is eight to 16 weeks (Kanayama et al., 2008; Kanayama et al., 2003).

According to Sando (1999), many bodybuilders and athletes will change their preferences and behaviour with selected performance-enhancing anabolic androgenic substances and steroids: (a) in order to increase muscle mass and strength, (b) for better perception of their physical, visual, and aesthetic appearance, (c) for overall effectiveness; and (d) because this requires less effort in less time than relying solely on physical training, exercise, and a healthy diet.

Aguilar-Navarro et al. (2020) argue that in recent years, sports clubs and organizations around the world have sought to reduce the prevalence of doping and use of anabolic androgens and steroids in sports.

However, Sagoe et al. (2014) report that the lifetime prevalence of anabolic androgen and steroid abuse was 18.4% for non-professional athletes and 6.4% for men worldwide.

Legislative issues concerning anabolic androgenic substances and steroids in the Czech Republic are resolved by the New Criminal Code (Act No. 40/2009 Coll.) and in Slovakia by Act No. 397/2015 Coll. (for the purpose of criminal law it provides a list of substances with anabolic or other hormonal effects, amending certain laws).

This comparative study focuses on the consequences of the lockdown and the global COVID-19 pandemic on a selected sport, the fitness sector, *i.e.* classic working out and weightlifting, and changes in preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids. Such changes in preferences and behaviour might stem from the effort to regain the form and results that elite or recreational athletes previously achieved in the Czech Republic and Slovakia before the global COVID-19 pandemic. The study is divided into five parts. The first part is focused on the presentation of the research issues. This is followed by the theoretical background. After the definition of the theoretical background, research goals, methodologies, and data are presented. The penultimate part of the study presents selected primary data, including a discussion. The conclusion is the last part of the study, and summarizes the interesting findings.

● 2 THEORETICAL BACKGROUND

The outbreak of viral pneumonia at the end of 2019, caused by a new beta coronavirus (coronavirus 2019, SARS-CoV-2 virus, 2019-nCoV, COVID-19), caused confusion not only in Wuhan and the Hubei province, where the first cases were recorded, but shortly afterwards in the whole world. The disease has

claimed a large number of human lives worldwide, and the number of people infected increased daily (Ahmed et al., 2022; Zu et al., 2020).

Subsequently, on March 11, 2020, the World Health Organization labelled COVID-19, a disease caused by the severe acute respiratory syndrome virus coronavirus 2 (SARS-CoV-2), as a pandemic (Pinto et al., 2020).

According to World Health Organization statistics from August 2020, more than 0.7 million deaths have been reported in approximately 200 countries around the world since the outbreak of the pandemic (Ahmed et al., 2022).

With the primary goal of reducing the spread of the dangerous virus, extensive measures have been taken to minimize social and physical contacts among the global population. These measures culminated in a lockdown in various countries around the world. It can be said that the measures also had negative side effects, especially in the financial, social, and public health areas and the health of the population itself as a result of the postponement of medical examinations, operations, and the like (Boserup et al., 2020; Ding et al., 2021; Maringe et al., 2020).

As further stated in this connection by Wong et al. (2020), the impact of the global COVID-19 pandemic on the sports sector cannot yet be fully determined.

Halabchi et al. (2020), Chen et al. (2020), and Jukic et al. (2020) argue that the renewed sport preparation of elite or endurance athletes (elite athletes), as well as other athletes (recreational athletes), may not immediately yield the same results as before the global COVID-19 pandemic. Such decreased levels of sports performance may be affected by: (a) muscle mass loss, (b) weight gain and thus reduced speed or mobility, (c) decreased energy, strength, and endurance, (d) a weakened immune system, or (e) other factors which may have affected the athletes during the period of isolation of the population and the subsequent lockdown.

Should the sports preparation of top or endurance athletes and other athletes not progress according to the goals of the athletes themselves or their coaches, athletes may feel depressed, frustrated, anxious, and demotivated. For this reason, there could be changes in their preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids as a result of the lockdown and the global COVID-19 pandemic.

Selected performance-enhancing anabolic androgenic substances and steroids increase protein synthesis in the human body and affect the growth of skeletal muscle – anabolic effects – and cause the development of male sexual characteristics – androgenic effects (Mohammad, 2014).

Al-Harbi et al. (2020) state that selected performance-enhancing anabolic androgenic substances and steroids are used worldwide to improve physical appearance and perfor-

mance, and not only in sports, despite their significant negative side effects on human health.

Horwitz et al. (2018) mention that selected performance-enhancing anabolic androgenic substances and steroids cause rapid growth of muscle mass, increase individual performance, and have a positive effect on the physical appearance of an individual.

Albaker et al. (2021) argue that the misuse of anabolic androgenic substances and steroids is a prominent issue among athletes, along with a lack of knowledge about their adverse effects on human health. Health science in schools, health education, and awareness programmes are necessary not only for athletes, but also for personal trainers and fitness centre owners, as they are said to be one of the main sources of performance-enhancing anabolic androgenic substances and steroids.

The change in preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids could be linked to age, social status, level of education, social status, and monthly income (Albaker et al., 2021).

In this context, Jirásek (2015) states that there is scientific evidence of a relationship between sport and religion. This relationship could therefore be of further interest in the context of the lockdown and the global COVID-19 pandemic.

In the Czech Republic, the handling of anabolic androgenic substances and steroids is prohibited according to Act No. 40/2009 Coll. and punishable by imprisonment. On the territory of the Slovak Republic Act No. 397/2015 Coll. applies.

● 3 RESEARCH OBJECTIVE, METHODOLOGY, AND DATA

The study focuses on the consequences of the lockdown and the global COVID-19 pandemic for the selected sport, the fitness sector, i.e. classic working out and weightlifting, and changes in preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids. One of the aims of the study is to determine whether, in connection with the global COVID-19 pandemic, which affected, among other things, the traditional life of the population worldwide, there could be a change in preferences and behaviour regarding selected anabolic androgenic substances and steroids. The study was carried out in the Czech and Slovak Republics.

On the basis of a literature search, it can be said that changes in preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids could arise as a result of depression, frustration, anxiety, and demotivation among athletes and in connection with their failure to get back quickly and effectively into the form they had before the global COVID-19 pandemic.

The authors of the article wish to point out that their research is predicated only on a hypothetical basis. They do not promote or internally motivate athletes or others to use harmful and banned anabolic androgen performance-enhancing substances and steroids.

At the beginning of the questionnaire survey, the respondents were informed that the research was not focused on the promotion of, or motivation to experiment with or use, harmful and banned performance-enhancing anabolic androgenic substances and steroids. Furthermore, the respondents were informed that participation in the research was voluntary, and the survey was completely anonymous. Last but not least, the respondents also received information that the research had a purely hypothetical basis, i.e. how their preferences and behaviour could change if these substances were allowed in the Czech and Slovak Republics.

This comparative study is focused on the presentation of only some partial results, as the whole research study was rather extensive and detailed.

The main objective of this comparative study was to determine whether there is a statistically significant relationship between potential interest in information retrieval and subsequent possible changes in preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic in the context of the respondents' attitudes towards religion and their monthly income in the Czech and Slovak Republics.

The respondents' attitudes towards religion were monitored as: (a) devout believers, (b) religious, (c) undecided, (d) I am not religious, (e) I am an atheist (total denial of God or deities). The category of the monthly incomes of the respondents was assessed at intervals up to: (a) CZK 4999, (b) CZK 9999, (c) CZK 14,999, (d) CZK 19,999, (e) CZK 24,999, (f) CZK 29,999 and (g) CZK 30,000+. These intervals were chosen, among other things, because of the composition of the respondent sample pool, of whom 40.16% were Czech students and 26.88% were Slovak students. The conversion of the Slovak currency, the Euro, was performed into Czech crowns according to the current exchange rate of the Central Bank of the Czech Republic, the Czech National Bank, at the time of the research survey.

Research Question 1: Is there a statistically significant relationship between a potential interest in information retrieval and subsequent possible changes in preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic and the attitude of the Czech respondents to religion?

Research Question 2: Is there a statistically significant relationship between a potential interest in information retrieval and subsequent possible changes in preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic and the attitude of the Slovak respondents to religion?

Research Question 3: Is there a statistically significant relationship between a potential interest in information retrieval and subsequent possible changes in preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic and the monthly incomes of the Czech respondents?

Research Question 4: Is there a statistically significant relationship between a potential interest in information retrieval and subsequent possible changes in preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic and the monthly incomes of the Slovak respondents?

The collection of research data was carried out through an anonymous structured questionnaire survey in May and June 2021. A pre-test was carried out on ten respondents to ensure the quality of the survey design. The snowball method was applied to selected respondents.

The study started in fitness centres with the consent of those attending them to participate in the research. They were provided with information on the research investigation. Finally, the attendees were politely asked to distribute an online questionnaire survey to people they know could complete the questionnaire as well. In order not to distort the research data, an effort was made to recruit a diverse initial sample of respondents based on behavioural, demographic, and also geographical segmentation.

Quantitative research through the questionnaire survey consisted of several parts. For the purposes of the mathematical-statistical processing of research data, a total of 127 questionnaire surveys from the Czech Republic and 93 questionnaire surveys from the Slovak Republic were used. Pearson's chi-square test was applied to verify the research questions. Among other things, this test determines whether there is a relationship between the selected statistical features. If the p-value is lower than the standard level of significance (usually 5%, i.e. .05), the null hypothesis is rejected. The Microsoft Excel 2013 spreadsheet processor and IBM SPSS Statistics 23 statistical software were used to process the collected primary data.

● 4 RESULTS AND DISCUSSION

The structure of the addressed Czech and Slovak respondents who participated in the comparative study is presented in the table below (*Table 1*).

On the basis of the table (see *Table 1*), it can be said that 96.06% of the respondents from the Czech Republic participating in the study were men and 97.85% of those from the Slovak Republic were men. Regarding biological age, the largest proportion of the Czech respondents ranged from 20 to 29 years (70.08%) and among the Slovak respondents the largest proportion represented the age range from 20 to 29 years (60.22%). The respondents' attitudes towards religion in the Czech Republic showed the largest category as being 45.67% (I am not religious), while in Slovakia the largest category was

Table 1 | Structure of the addressed respondents (authors' own processing)

Czech Republic			Slovak Republic		
Gender	Absolute frequency	Relative frequency (%)	Gender	Absolute frequency	Relative frequency (%)
female	5	3.94	female	2	2.15
male	122	96.06	male	91	97.85
Total	127	100	Total	93	100
Age	Absolute frequency	Relative frequency (%)	Age	Absolute frequency	Relative frequency (%)
15–19	5	3.94	15–19	6	6.45
20–29	89	70.08	20–29	56	60.22
30–39	17	13.39	30–39	17	18.28
40 plus	16	12.6	40 plus	14	15.05
Total	127	100	Total	93	100
Religious attitude	Absolute frequency	Relative frequency (%)	Religious attitude	Absolute frequency	Relative frequency (%)
devout	7	5.51	devout	16	17.2
religious	26	20.47	religious	44	47.31
undecided	34	26.77	undecided	8	8.6
not religious	58	45.67	not religious	23	24.73
atheist	2	1.57	atheist	2	2.15
Total	127	100	Total	93	100
Monthly income (CZK)	Absolute frequency	Relative frequency (%)	Monthly income (CZK)	Absolute frequency	Relative frequency (%)
0–4999	8	6.3	0–4999	6	6.45
5000–9999	12	9.45	5000–9999	13	13.98
10,000–14,999	26	20.47	10,000–14,999	9	9.68
15,000–19,999	20	15.75	15,000–19,999	18	19.35
20,000–24,999	29	22.83	20,000–24,999	28	30.11
25,000–29,999	22	17.32	25,000–29,999	14	15.05
30,000 plus	10	7.87	30,000 plus	5	5.38
Total	127	100	Total	93	100
Training before COVID-19	Absolute frequency	Relative frequency (%)	Training before COVID-19	Absolute frequency	Relative frequency (%)
yes	125	98.43	yes	90	96.77
no	2	1.57	no	3	3.23
Total	127	100	Total	93	100
Training after COVID-19	Absolute frequency	Relative frequency (%)	Training after COVID-19	Absolute frequency	Relative frequency (%)
yes	122	96.06	yes	89	95.7
no	5	3.94	no	4	4.3
Total	127	100	Total	93	100

47.31% (religious). In the segmentation of the Czech respondents according to monthly incomes the most numerous group was represented by the range from 20,000 to 24,999 Czech crowns (22.83%) and among the Slovak respondents the most numerous group was also represented by the range from 20,000 to 24,999 Czech crowns (30.11%). Furthermore, it can be stated that the respondents experienced a slight reduction in training in fitness centres after the global COVID-19 pandemic. Regular training means training at a frequency of at least three times a week.

Research Question 1: Is there a statistically significant relationship between a potential interest in information retrieval

and subsequent possible changes in preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic and the attitudes of the Czech respondents to religion?

Pearson's chi-square test was used to verify Research Question 1, where the p-value is higher than the standard value of significance, i.e. .05. The null hypothesis is therefore not rejected at the level of significance of 5%. Thus, it can be said that the attitude of the Czech respondents to religion does not affect their potential interest in information retrieval and subsequent possible changes in their preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances.

es and steroids before and after the global COVID-19 pandemic ($X^2 = 15.822$, $df = 12$, $p = .200$).

Research Question 2: Is there a statistically significant relationship between a potential interest in information retrieval and subsequent possible changes in preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic and the attitudes of the Slovak respondents to religion?

Pearson's chi-square test was applied in the verification of Research Question 2. The research findings showed that the p-value is equal to .001. This means that the p-value is lower than the significance value of 5%. It can be concluded that there is a statistically significant relationship between a potential interest in information retrieval and subsequent possible changes in preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids before and after the global COVID-19 pandemic and the attitudes of the Slovak respondents to religion ($X^2 = 34.422$, $df = 12$, $p < .05$). The strength of this dependence was further investigated using Cramer's V. The value is at 0.248. It shows a weak relationship.

Research Question 3: Is there a statistically significant relationship between a potential interest in information retrieval and subsequent possible changes in preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic and the monthly incomes of the Czech respondents?

To determine the answer to Research Question 3 Pearson's chi-square test was used. It was found that the p-value is higher than the significance value of .05. The null hypothesis is thus not rejected at the level of significance of 5%. Therefore, we argue that the monthly income of the Czech respondents does not affect their potential interest in information retrieval and subsequent possible changes in their preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids before and after the global COVID-19 pandemic ($X^2 = 16.449$, $df = 18$, $p = .561$).

Research Question 4: Is there a statistically significant relationship between a potential interest in information retrieval and subsequent possible changes in preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic and the monthly incomes of the Slovak respondents?

In order to verify Research Question 4 Pearson's chi-square test was used. On the basis of the research that was conducted, it can be said that the p-value is equal to .993. This means that it is higher than the standard significance value, i.e. .05. The null hypothesis is thus not rejected at the level of significance of 5%. Therefore, we claim that the monthly income of the Slovak respondents does not affect their potential interest in information retrieval and subsequent possible changes in their preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids and after the global COVID-19 pandemic ($X^2 = 6.674$, $df = 18$, $p > .05$).

The study discusses the possible consequences of the lockdown and the global COVID-19 pandemic on the selected sport and the changes in user preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids. The research carried out in this study focused on the respondents' attitudes to religion and also on their monthly incomes. It can be said that there is no scientific evidence on the issue of lockdown, the global COVID-19 pandemic, and the fitness industry in the context of selected anabolic androgen performance-enhancing substances and steroids. However, in our study it was found that (a) the attitudes of the Czech respondents to religion have no effect and (b) the attitudes of the Slovak respondents to religion have an effect (according to Cramer's V it is a weak relationship) on users' potential interest in information retrieval and subsequent possible changes in user preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids before and after the global COVID-19 pandemic.

The results could be explained, among other things, by the fact that Slovakia is significantly more religious than the Czech Republic. Furthermore, in Slovakia faith plays a relatively dominant role in the lives of its inhabitants. Even the structure of our respondents showed that Slovakia manifests more positive values. There were 17.20% of devout believers and 47.31% of believers, while in the Czech Republic, 5.51% of the respondents identified themselves as devout and 20.47% as religious.

In our study, it was found that the monthly incomes of the respondents do not affect their potential interest in information retrieval and subsequent possible changes in their preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic.

Albaker et al. (2021) investigated the negative effects of anabolic androgenic substances and steroids on fitness centre attendees in Saudi Arabia, finding, among other things, that the prevalence of anabolic androgenic and steroid users was highest among low-income attendees (less than 5,000 Saudi Arabian riyals), amounting to 41.6%, and then in attendees with an income of 5,000 to 10,000 Saudi riyals (38.1%). Furthermore, the research found that there was no relationship between the levels of monthly income and of education in terms of the prevalence of the use of anabolic androgenic substances and steroids. These findings are identical with the results of our study.

Al-Harbi et al. (2020) conducted research in 20 fitness centres in Riyadh, Saudi Arabia, where it was found that the prevalence of users of selected anabolic androgens and steroids was highest among low-income attendees (less than 5000 Saudi riyals), at 38.1%. This was followed by incomes of 5000 to 9999 Saudi riyals (in 37.3%), followed by incomes of 10,000 to 14,999 Saudi riyals (14.9%), followed by attendees with incomes of 15,000+ Saudi riyals (9.7%). Their research determined that there was no relationship between monthly incomes and the prevalence of the use of anabolic androgenic substances and steroids, which corresponds to the results of our research.

Aldarweesh and Alhajaj (2020) conducted studies in the eastern province of Saudi Arabia, where they found that the incomes of the largest percentage of their respondents who had experience with selected anabolic androgens and steroids ranged from 5000 to 10,000 Saudi riyals (38.2%) and the smallest percentage of respondents had incomes greater than 15,000 Saudi riyals (11.2%).

On the other hand, Nogueira al. (2014) carried out research at 52 fitness centres in João Pessoa, Brazil, where it was found that the users of selected anabolic androgenic substances and steroids were individuals aged 23 to 27 years with a monthly family income of one to three minimum wages (45.2%). The users were individuals with lower incomes.

Hakansson et al. (2012) conducted a study in men aged 15 to 64 years in Sweden and found that a man's monthly income does affect his motivation to change his preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids.

● 5 CONCLUSIONS

This comparative study dealt with the issue of the consequences of the lockdown and the global COVID-19 pandemic on the selected sport and changes in user preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids. The selected sport is the fitness industry. Quantitative research through an online questionnaire survey, parts of which have been presented in this comparative study, was conducted in the Czech and Slovak Republics.

The main objective of the comparative study was to determine whether there is a statistically significant relationship between a potential interest in information retrieval and subsequent possible changes in preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic in the context of the respondents' attitudes towards religion and their monthly incomes in the Czech and Slovak Republics.

Through the research, answers to the four research questions were gradually found. These questions were formulated on the basis of a literature search.

The results of our study brought the following findings: (a) the attitudes of the Czech respondents to religion do not affect their potential interest in information retrieval and subsequent possible changes in their preferences and behaviour regarding selected performance-enhancing anabolic androgenic sub-

stances and steroids before and after the global COVID-19 pandemic; (b) the attitudes of the Slovak respondents to religion influence their potential interest in information retrieval and subsequent possible changes in their preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids before and after the global COVID-19 pandemic (according to Cramer's V, the relationship was characterized as weak), (c) the monthly incomes of the respondents do not affect their potential interest in information retrieval and subsequent possible changes in their preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids before and after the global COVID-19 pandemic.

In the light of the literature search that was conducted and the results of the comparative studies, it can be stated that changes in preferences and behaviour regarding selected performance-enhancing anabolic androgenic substances and steroids could stem from depression, frustration, worries, and demotivation among athletes (both elite and recreational) and from the fact that they are unable to regain the form they had before the global COVID-19 pandemic as quickly and as effectively as they might have hoped to. The originality, value, and contribution of this comparative study lie, among other things, in characterizing the category of the population that is most influenced or motivated to change its preferences and behaviour regarding selected performance-enhancing anabolic androgens and steroids in the context of the global COVID-19 pandemic. The limits or limitations of this comparative study include the small research sample of respondents in both countries, the online form of the questionnaire survey, the short time period for the realization of the comparative study, and the fact that the quantitative research used its own questionnaire survey, which limited the possibility of detailed comparison of the results with other research findings. Despite these limits and limitations, it can be said that the comparative study presents completely new views, data, and information that can help in the implementation of other research studies or surveys focused on a similar research topic.

Authors' contributions:

Conceptualization: JB, PS; Introduction and Theoretical background: JB, PS; Methodology and Results: PS, JB; Final edition: PS, JB. Both authors contributed to the article and approved the final version of the manuscript.

Declaration of interest:

The authors declare that they do not have any competing financial, professional, or personal interests from other parties.

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