



UNIVERSITY OF PÉCS  
Faculty of Health Sciences



**MEFS**

MAGYAR EGYETEMI - FŐISKOLAI  
SPORTSZÖVETSÉG

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## FOREWORD BY THE GUEST EDITORS

The Hungarian University Sports Federation is committed to the welfare and physical activity of the students of higher education. Among its several Committees which drives forward the fulfillment of its strategy the Theoretical and Scientific Committee provides guidance and support to the professionals behind talented university athletes in providing scientific support and educating the intelligentsia of the future for a healthy lifestyle by supporting methodologically sound research results and scientifically based development plans. In accordance with this objective the Theoretical and Scientific Committee established a partnership with the Sports and Health Science Notebooks to create a platform to publish research results about the physical activity of university students.

With its severe consequences the COVID-19 pandemic influenced the lives and day to day habits of people all around the world and naturally university students' habits were also severely impacted. Therefore, the Theoretical and Scientific Committee of the Hungarian University Sports Federation initiated a research proposal about the sporting habits of students in Hungary.

Three studies were selected into this special issue in this topic, in the first article Nagy and Szentéi shows their results from their survey-based research, which consists of a sample of  $n=970$  people from which 693 studies at the University of Pécs and the rest serves as the control group. Not surprisingly the physical ac-

tivity of students and young adults were also significantly decreasing, but neither education, marital status, nor type of residence did not differentiate the decrease significantly.

In the second article Győri et al. shows their results from the research conducted in the University of Szeged. In research process  $n=2,711$  students were surveyed (11% of the population) and from their result in comparison with earlier similar research long-term trends have been identified. According to university students the selection of a sports provider affordability and accessibility of the sports venue play the most significant role.

The third article was written by Bartha, Rácz and Kincses, where the authors show how COVID disrupted the physical activity of students of Budapest University of Technology and Economics and how digital technology can help to connect physical activity of students and even popularize students' running events. In this paper qualitative (25 interview) and quantitative (survey with the sample size of  $n=320$ ) methods were also elaborated and data of two on-line running events were examined. During COVID times university students felt the need of online running competitions.

The fourth article of this special issue is connected to the Economic and social impact of international sport events before, during and after the COVID-19 pandemic Special Issue of Sports and Health Science Notebooks. In this article

Emődy and Polcsik share their research results about the 2019 ICF World Kayak-Canoe Speed Championships. The primary research of this paper was also survey based where n=757 spectators, athletes and other participants filled out the questionnaire. The World Championships had a great effect on the tourist consumption of the region and created a significant contribution to the national economy, with HUF 962 million GDP contribution, HUF 814 million tax revenues while HUF 2.489 billion total national output is connected to the competition, which was responsible for 33,107 guest nights in Szeged.

The fifth article, authored by Máté, Páthy and Gyömörei focuses on the so-

cial support of sporting events with the case of Győr, which hosted the EYOF in 2017 and several international sport events from that time. They found that on the level of personal quality of life and satisfaction with the living environment, sporting events are unanimously perceived as having a positive impact on the citizens of Győr.

All in all, we believe that all articles selected to this special issue show interesting information about physical activity either from university and student perspective or from the economic impact perspective of a major international sport event.

We hope you will enjoy the reading!

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## EFFECT OF COVID-19 ON PHYSICAL ACTIVITY AMONG UNIVERSITY STUDENTS AND YOUNG ADULTS

### A COVID-19 JÁRVÁNY HATÁSA AZ EGYETEMISTÁK ÉS A FIATAL FELNŐTTEK FIZIKAI AKTIVITÁSÁRA

#### Abstract

**Objective:** The COVID-19 pandemic has reduced the physical activity of the population. For this reason, the aim of our research was to compare the level of physical activity of the students of Pécs and the average young adult population during the first period of the pandemic.

**Hypotheses:** In our study, we set up 4 hypotheses: (H1) As a result of the COVID-19 pandemic, there was a smaller decrease in the level of physical activity of students than of non-students (minutes/week). (H2) During the declaration of an emergency, the frequency of weekly sports played by university students decreased to a lesser extent than for non-university students. (H3) During the declaration of an emergency, the type of marital status influences the degree of physical activity of the students (minutes/week). (H4) During the declaration of an emergency, the type of residence influences the degree of physical activity of the students (minutes/week).

**Materials and methods:** In our research we performed a primary study with the survey method. A total of 970 people

completed the IPAQ validated questionnaire from 693 college students and 277 young adults. Statistical analysis was performed using IBM SPSS 22 software using descriptive analyzes (mean, standard deviation) and analytical tests (chi-square test, Mann-Whitney test, Kruskal-Wallis test, McNemmar test) ( $p < 0.05$ ).

**Results:** There was a significant decrease ( $p = 0.001$ ) in the physical activity of the studied populations during the pandemic, however, no significant difference ( $p = 0.159$ ) was found between the two groups in the degree of decrease. There was a similar increase in the frequency of sports in both populations during closures, no significant difference was found ( $p = 0.557$ ). Marital status did not affect physical activity either among college students ( $p = 0.402$ ) or among young adults ( $p = 0.266$ ). The type of residence is not a factor influencing the physical activity of the students during the closures ( $p = 0.377$ ). Among university students, the proportion of runners and joggers increased significantly during the epidemic ( $p < 0.001$ ), and among young adults, the

practice of music and dance movement decreased significantly ( $p < 0.001$ ).

**Conclusion:** In our research we proved that the physical activity of the studied populations decreased due to the emergency situation. Our results may provide guidance for the time of the next closure.

**Keywords:** COVID-19, physical activity, students, young adults

### Absztrakt

**Célkitűzés:** A COVID-19 világvárvány következtében csökkent a lakosság fizikai aktivitása. Ennek okán, kutatásunk célja volt összehasonlítani a pécsi egyetemisták és az átlag fiatal felnőtt lakosság fizikai aktivitásának mértékét a pandémia első lezárásának időszakában.

**Hipotézisek:** A vizsgálatunkban 4 hipotézist állítottunk fel: (H1) A COVID-19 világvárvány következtében kisebb mértékben csökkent az egyetemisták, mint a nem egyetemisták fizikai aktivitásának mértéke (perc/hét). (H2) A veszélyhelyzet kihirdetése alatt az egyetemisták heti sportolási gyakorisága kisebb mértékben csökkent, mint a nem egyetemistáké. (H3) A veszélyhelyzet kihirdetése alatt a családi állapot típusa befolyásolja az egyetemisták fizikai aktivitásának mértékét (perc/hét). (H4) A veszélyhelyzet kihirdetése alatt a lakóhely típusa befolyásolja az egyetemisták fizikai aktivitásának mértékét (perc/hét).

**Anyag és módszerek:** Kutatásunkban primer vizsgálatot végeztünk. Az IPAQ validált kérdőívet összesen 970 fő töltötte ki, amelyből 693 fő volt egyetemista, míg 277 fő volt fiatal felnőtt. A statisztikai elemzést az IBM SPSS 22. szoftver

segítségével végeztük, melyben leíró elemzéseket (átlag, szórás) és analitikus próbákat alkalmaztunk (khi-négyzet próba, Mann-Whitney próba, Kruskal-Wallis próba, McNemmar próba) ( $p < 0,05$ ).

**Eredmények:** Szignifikánsan csökkent ( $p = 0,001$ ) a vizsgált populációk fizikai aktivitása a pandémia idején, azonban a csökkenés mértékében nem találtunk markáns különbséget ( $p = 0,159$ ) a két csoport között. Hasonló mértékben növekedett a sportolás gyakorisága mindkét populációban a lezárások idején, ezen a téren nem találtunk szignifikáns különbséget ( $p = 0,557$ ). A családi állapot nem befolyásolja a fizikai aktivitást sem az egyetemistáknál ( $p = 0,402$ ), sem a fiatal felnőttek körében ( $p = 0,266$ ). A lakóhely típusa nem befolyásoló tényező az egyetemisták fizikai aktivitásában a lezárások alatt ( $p = 0,377$ ). Az egyetemisták körében szignifikánsan nőtt a futók-kocogók aránya a járvány idején ( $p < 0,001$ ), míg a fiatal felnőttek körében szignifikánsan csökkent a zenés-táncos mozgásformák üzése ( $p < 0,001$ ).

**Következtetések:** Kutatásunkban igazoltuk, hogy a veszélyhelyzet hatására csökkent a vizsgált populációk fizikai aktivitása. Eredményeink iránymutatást adhatnak egy következő lezárás idejére.

**Kulcsszavak:** COVID-19, fizikai aktivitás, egyetemisták, fiatal felnőttek

### Introduction

The active lifestyle has been an integral part of human life since ancient times, and its function has changed over the ages. Today, the nature of recreation, entertainment and health-preserving func-



tion dominates. The postmodern consumer society offers many opportunities for active leisure (Ábrahám, 2016). Today, the innumerable beneficial effects of physical activity (henceforth: PA) on the human body are unquestionable (Miles, 2007; Laczkó and Melczer, 2015). According to domestic and international statistics, the leading causes of death can be related to the sedentary lifestyle of the population. Numerous studies confirm that lack of exercise is a risk factor for the development of cardiovascular problems, metabolic and cancer diseases, various mental illnesses, and viral illnesses (Laczkó and Melczer, 2015). PA has an impact not only on the individual but also at the national level. The value of the burden on the national economy resulting from the lack of PA was quantified by Ács et al. in 2017 (calculated in 2009 prices), the total cost of the Hungarian Budget deriving from the lack of PA cost HUF 72 billion (Ács et al., 2020a). For the reasons mentioned above, exercise can also be said to be an integral part of a healthy lifestyle.

According to Eurobarometer, almost half of Europe's population is physically inactive, only 7% exercise regularly and almost one in three people exercise with some regularity (Special Eurobarometer, 2017). Sports conditions in the V4 countries are worse than the EU average (Laczkó et al., 2020a). Sport habits are influenced by a number of factors, such as demographic, quality of life, infrastructural, socioeconomic, and sociocultural factors (Paár et al., 2020; Morvay-Sey et al., 2020; Laczkó et al., 2020b; Györi et

al., 2021).

SARS-CoV-2 has become a pandemic following the emergence of the virus and its rapid spread. The epidemic caused by the virus has changed many areas of our lives. Initially, a vaccine against the virus was not yet available, so national, regional and local authorities have introduced a number of regulations to slow the spread of the epidemic. On March 11, 2020, the Hungarian government declared a state of emergency and introduced regulations to slow down the pandemic. These regulations were mainly aimed at reducing personal contact. As a result, mass events were banned, international travel was restricted, and the intellectual work population settled for distance learning, as did education. Community and leisure sports events were discontinued, running tracks and leisure sports facilities suitable for organizing mass sports events were closed, and students could play sports exclusively at home or alone. The COVID-19 virus directly affects all parts of the world (Mutz and Gerke, 2021). In their paper Stockwell et al. (2021) studying the results of 64 representative studies conducted in different countries around the world, concluded that during the first wave of the COVID-19 epidemic, PA decreased and sedentary activity increased almost everywhere. By 17.7% of the studies, the reduction in time spent on sports was more than 50% in healthy adult populations (Stockwell et al., 2021). In addition to research on the entire population, there have been a number of studies that have analyzed the sporting habits of smaller subgroups, including

a series of studies examining groups of key age, occupational, social status, and health status.

With the introduction of telecommuting, the PA of office workers has decreased very significantly. A study by Fukushima et al. (2021) found that office workers sat an average of 111 minutes more per day while working from home at the time of COVID-19 restriction. Some researches have also highlighted differences based on social and societal status. Several studies point out that those at a social and financial disadvantage were much more characterized by a decrease in PA and an increase in forms of inactivity during the period of restrictions and pandemics. This further worsens the chances of these social groups maintaining a good quality of life (Ali et al., 2020; EPRS 2021; Grix et al., 2020; Berki, et al., 2021). De Boer and colleagues summarized 26 studies on the subject, which found that although the methods used varied widely, almost all studies reported negative effects on the PA and well-being of people with physical disabilities and / or chronic illness at the time of the first outbreak. in a wave (De Boer et al., 2021).

Several studies point out that those at a social and financial disadvantage were much more characterized by a decrease in PA and an increase in forms of inactivity during the period of restrictions and pandemics. This further worsens the chances of these social groups maintaining a good quality of life (Ali et al., 2020; EPRS 2021). With the introduction of the restrictions, sports competitions also

stopped, and the PA of athletes and competitors in the Hungarian sports sector also decreased significantly (Szabó et al., 2020).

In a representative study, Ács and co-authors examined the PA of the Hungarian population in relation to the COVID-19 pandemic. Their results show that 64.17% of the respondents did not play sports before the curfew, this proportion increased to 78.33%. The number of athletes 1-4 times a week decreased by 39.47%, and the number of athletes more than 4 times a week fell by 40%. Respondents' total activity decreased by almost two hours per week, which mainly affected intense PA, and men were physically more active during the emergency (Ács et al, 2020b). Prior to the second wave of COVID-19, almost half of the population had not changed their sports habits, and one in five people had stopped playing sports altogether. Almost 10% of those surveyed said they do sports but do other sports. The most popular form of training (running, jogging) did not change during the second wave. As a result of the second wave, the proportion of never-athletes of all ages has also increased (Ács et al., 2020c).

A representative study by Morvay-Sey et al. (2020) found that one in four people had got increased free time during COVID-19 curfew restrictions, yet the rate of physical inactivity increased by 14.16%. Respondents who played sports even before the curfew changed their sports habits significantly. Under the restrictions, the pursuit of various sports declined, most notably contact sports,

which could not be performed at home alone. In terms of mental health, more than a third of those surveyed rated their subjective mental and physical health as the worst or worst possible. Perceived stress was higher in those with higher education and even lower in primary and vocational education.

Almost all studies confirm that the degree of PA of university students decreased significantly and sitting time increased (Ács et al., 2020c; Gallé et al., 2020; Gallo et al., 2020). Kovács and co-authors (2020) examined the PA and time spent in front of the screen of students aged 6-18 in 11 countries. A total of 8,997 students filled in the online questionnaire, of which only the results for the Hungarian population were presented by the authors (n=2,626). Their average age was 13.3+/-1.56 years, 47.3% of the respondents were men and 70.6% were urban residents. Very few people have complied with the WHO-recommended requirement for PA, with only 16.3% of women and 23.8% of men. In contrast, the amount of time spent in front of the screen was well above the recommended limit of up to 2 hours per day (3.7 hours) (Kovács, et al., 2020). Examining university students (n=13,754), Rodríguez-Lallard and colleagues found that students had a moderate (29.5%) and a strong (18.3%) decrease in overall PA and an increase in sitting time (52.7%) during confinement. It should be emphasized that in addition to the reduction of various forms of activity, the students spent more time with high-intensity interval training (18.2%) and holistic ac-

tivities (e.g. yoga) (80.0%) (Rodríguez-Lallard et al., 2021). According to research on Italian student's (n=1,430), PA decreased by 365.5 minutes per week and the amount of time spent in front of the screen increased by 52.4 minutes per day (Gallé et al., 2020). According to a study at the University of Australia, the PA of biomedical students was reduced by about 30% as a result of the COVID-19 epidemic (Gallo et al., 2020).

### **Objective**

The aim of our research was to investigate the physical activity of young adults and students of University of Pécs at the time of the first closure of the COVID-19 pandemic. We identify how marital status and place of residence impact students' PA, and we reveal how the epidemic changed the frequency of pursuing different sports.

### **Hypotheses**

1. The COVID-19 pandemic resulted in a smaller reduction in the physical activity (minutes/week) for college students than for young adults.
2. During the declaration of the emergency, the frequency of weekly sports (times a week) played by university students decreased to a lesser extent than for young adults.
3. The type of marital status during the declaration of an emergency affects the degree of physical activity of students (minutes/week).

4. The type of residence during the declaration of an emergency affects the degree of physical activity of students (minutes/week).

### Materials and methods

In our research, we performed a primary study. The 970-person sample consists of two subsamples. One of the sub-samples comprises 277 people aged 18-29 as a part of the representative sample of the adult Hungarian population (1,200 people). The other sub-sample consists of a survey of 693 students examining students in Pécs. We considered this important in order to compare our student sample in terms of physical activity to the young adult population. A young

adult is one who is between 18 and 30 years old (Arnett, 2000). Statistical analysis of our research was performed using SPSS 22 software. Among the statistical methods, descriptive statistical analyses and analytical tests were used, which were: mean, percentage calculation, chi-square test, Mann-Whitney test, McNemar test, Kruskal-Wallis test. The questionnaire used was self-completed and anonymous. The significance level was  $p < 0.05$ . The questions of the IPAQ validated questionnaire were included in the questionnaire. The main issues we examined were the degree of physical activity, the frequency of weekly sports, marital status, the type of settlement, and what type of sports were performed (Table 1).

Table 1. Possible answers to the questionnaire  
1. táblázat: A kérdőívben szereplő lehetséges válaszok

Question	Possible answers				
Student or not	yes	no			
Marital status	unique	marital relationship	married	widow	divorced
Type of residence	village	city	county seat	capital	
Total physical activity minutes per week before and after COVID	Based on data obtained from the IPAQ questionnaire				
How many times a week do sports	1-2 times	3-4 times	5 or more times	does not move regularly	

Source: Authors' edition  
Forrás: saját szerkesztés

### Results

In our sample, young adults (18-29 years old) included 693 university students and 277 young adults. For all participants, physical activity before the first COVID closure was significantly higher ( $M=589.98$ ;  $p<0.001$ ) than their physical activity during the first wave of COVID, according to the IPAQ questionnaire ( $M=407.75$ ). Prior to COVID closure, physical activity was significantly higher in students than in young adults (Mann-Whitney = 114454.5;  $p<0.001$ ). The rate of physical activity generally decreased during the first wave of COVID. There was a similar decrease in both groups compared to pre-closure rates, and there was no significant differ-

ence between students and young adults (Mann-Whitney = 103163.5;  $p<0.053$ ) in terms of minutes of weekly physical activity during closure.  $M=187.13$ , a decrease of 31%, in young adults  $M=170.01$ , a decrease of 30%. The average weekly physical activity decreased from 601.68 minutes to 414.55 ( $p<0.001$ ) in university students, while it decreased from 560.83 minutes to 390.82 minutes ( $p<0.001$ ) in young adults. There were no significant difference between them (Mann-Whitney = 101089.5; 0.159) (Table 2).

There was a significant difference in the number of pre-closure COVID sport frequencies between university students

Table 2. All physical activity before and during COVID-19 lockdown.

2. táblázat: Fizikai aktivitás a COVID-19 miatti lezárások előtt és alatt

<b>Average weekly physical activity minutes before COVID</b>	<b>Average</b>	<b>St. dev.</b>
Students	601.68	461.72
Young adults	560.83	613.36
Altogether	591.11	510.08
<b>Average weekly physical activity minutes during COVID</b>	<b>Average</b>	<b>St. dev.</b>
Students	414.55	435.7
Young adults	390.82	496.92
Altogether	407.75	453.95

Source: Authors' edition

Forrás: saját szerkesztés

and young adults (Mann-Whitney = 113113.0;  $p < 0.001$ ), we saw the university students did exercise more times than young adults before COVID lockdown (Table 3).

Based on the average frequency of sports (0; 1.5; 3.5; 6) quantified by the mean of the class intervals, it can be seen that the number of sport occasions has increased during COVID lockdown, but we can also see a similar increase in the frequency of sports during the lockdown between university students and young adults with Mann-Whitney test ( $p = 0.557$ ).

In terms of the size of the settlement, our sub-sample, which is representative of members of society aged 18-29, showed a trend in domestic and international physical activity (Eurobarometer,

2009, 2013, 2017), according to which the physical activity of the villagers was significantly higher compared to urban, county and capital city residents ( $p < 0.001$ ). This difference remained significant in young adults during COVID lockdown ( $p > 0.001$ ) and the village category shows a significantly higher value than all other settlement types with Kruskal-Wallis test in both study periods ( $p < 0.001$ ). The university students sample did not show significant difference during COVID lockdown, ( $p = 0.377$ ) and there was no significant difference either before COVID with the Kruskal-Wallis test among university students ( $p = 0.453$ ) (Table 4).

In terms of marital status, there was no significant difference in the period during COVID lockdown in either the young

Table 3. Sports frequency before and during COVID-19 lockdown  
3. táblázat: Sportolási gyakoriság a COVID-19 lezárások előtt és alatt

<b>Frequency before COVID</b>	<b>None</b>	<b>1-2 times</b>	<b>3-4 times</b>	<b>5 or more times</b>
Young adults	44.40%	22.40%	26.70%	6.40%
Students	37.50%	27%	26.10%	8.65%
<b>Frequency during COVID</b>	<b>None</b>	<b>1-2 times</b>	<b>3-4 times</b>	<b>5 or more times</b>
Young adults	54.50%	2.80%	25.60%	16.90%
Students	27.30%	26.10%	27.10%	19.50%

Source: Authors' edition

Forrás: saját szerkesztés



Table 4. Physical activity minutes by type of settlement in university students and young adults

4. táblázat: Heti átlagos fizikai aktivitás percben mérve a lakóhely típusa szerint az egyetemi hallgatók és a fiatal felnőttek körében

<b>Average weekly physical activity minutes before COVID</b>	<b>Young adult average</b>	<b>St. dev.</b>	<b>Undergraduate average</b>	<b>St. dev.</b>
Village	933.56	874.74	611.61	453.25
County seat	442.4	423.89	588.18	475.13
City	419.95	399.83	607.41	425.93
Budapest	360.93	276.61	667.93	549.51
Kruskall-Wallis	p < 0.001		p = 0.453	
<b>Average weekly physical activity minutes before COVID</b>	<b>Young adult average</b>	<b>St. dev.</b>	<b>Undergraduate average</b>	<b>St. dev.</b>
Village	633.56	735.6	428.64	409.06
County seat	325.56	419.39	414.93	468.52
City	305.43	275.52	410.93	435.7
Budapest	238.7	235.86	392.33	495.37
Kruskall-Wallis	p < 0.001		p = 0.377	

Source: Authors' edition

Forrás: saját szerkesztés

adults ( $p=0.266$ ) nor the sample of university students using the Kruskal-Wallis test ( $p=0.402$  (Table 5).

According to the sports categories, there was a difference between university students and young adults in terms of running and jogging compared to before COVID, the proportion of runners and joggers increased by 4.7% among university students during COVID closing, while it decreased by 1.4% among young adults (Table 6). Weight training (-6.8%) and music-dance movements (-7.2%) were stopped by a higher percentage of young adults at the time of lockdown than the group of university students,

(weight -0.7%, music-dance - 1.8%) and the number of non-athletes decreased significantly from 33% to 26.4% among university students (Table 6). There was no significant difference between groups in racket sports, martial arts, extreme, water and rolling sports.

### Discussion and Conclusions

In our research, we compared the PA of students studying at the University of Pécs with the Hungarian young adult population before and during the declaration of the first emergency caused by the COVID-19 pandemic. There have been a number of government decisions to increase PA, and in this context it is

Table 5. Physical activity by marital status during COVID lockdown  
5. táblázat: Fizikai aktivitás a családi állapot szerint a COVID lezárások alatt

Physical activity minutes during COVID		Average	St. dev.
Young adults	unique	382.47	510,144
	relationship	414.31	462,919
	married	377.81	522,382
	all	390.82	496,925
Students	unique	428.55	431,625
	relationship	367.75	406,337
	married	633.27	689,792
	all	414.55	435.707

Source: Authors' edition

Forrás: saját szerkesztés

Table 6. Sports habits before and during COVID lockdown  
among university students and young adults

6. táblázat: sportolási szokások a COVID lezárások előtt és alatt egyetemi hallgatók és fiatal felnőttek körében

What sports does he do	Before COVID	After COVID	P-value	Before COVID	After COVID	P-value
Racket sports	0.20%	0%	p = 0.500	2.50%	1.40%	p = 0.453
Martial art	0.70%	0.15%	p = 0.219	1.80%	0.70%	p = 0.453
Running, jogging	5.80%	10.50%	p = 0.000	18.40%	17%	p = 0.635
Musical dancer	7.10%	5.30%	p = 0.142	13.70%	6.50%	p = 0.000
Extreme sport	0.40%	0.14%	p = 0.500	0.30%	0%	p = 1,000
Water sport	0.20%	0.14%	p = 1,000	0.20%	0%	p = 0.063
Rolling sports	0.05%	0.70%	p = 0.500	0.15%	1%	p = 1.000
Weight training	8.20%	7.50%	p = 0.635	14.40%	7.60%	p = 0.002
Ball sports	3.30%	0.40%	p = 0.000	8.70%	1.40%	p = 0.000
Other sports	7.10%	17.30%	p = 0.000	2.90%	0%	p = 0.008
No sports	33.30%	26.40%	p = 0.000	1.80%	6.50%	p = 0.011

Source: Authors' edition

Forrás: saját szerkesztés

important to mention the introduction of everyday physical education in secondary schools and the introduction of compulsory exercise courses in many university faculties. The undisguised aim of these changes was to make sports and exercise more popular among young people.

The SARS-CoV-2 virus, released in 2019, has become a global pandemic, affecting all parts of the world directly (Mutz and Gerke, 2020). On March 11, 2020, the Hungarian government declared a state of emergency and tried to slow down the spread of the virus with the help of various austerity measures and regulations. COVID-19 virus resulted in decreased PA in the population (Stockwell et al., 2021; Ali et al., 2020; Grix et al., 2020). Our results also support the results of several researches on this topic (Ács et al., 2021; Morvay-Sey et al., 2020; Kovács et al., 2020; Szabó et al., 2020), according to which the participants had a significantly higher level of PA before the announcement of the emergency as during an emergency. Several studies add that, at the same time, the amount of time spent sitting increased significantly (Gallé et al., 2020; Gallo et al., 2020).

PA among college students and young adults decreased significantly during the emergency. There was a 31% decrease for students and a 30% decrease for young adults (minutes/week). However, our first hypothesis was not confirmed, as there is no significant difference in the extent of the decrease in PA between the

undergraduate and young adult populations.

In terms of the frequency of sports, students were more likely to engage in some form of sport activity prior to graduation. During the pandemic, a similar increase in the frequency of sports was observed in both populations, so no significant difference was found. Therefore, our second hypothesis was not confirmed.

Based on our research findings, residence is not an influencing factor for either the university or young adult population during the COVID closure period. Thus, our third hypothesis was not confirmed.

In terms of place of residence, it can be said that the level of PA of the young adult society living in the villages in the period before and during the pandemic was significantly higher than that of the inhabitants in the cities and counties. This result is also confirmed by the 2009, 2013, 2017 Eurobarometer surveys (Eurobarometer, 2009; 2013; 2017). However, for university students, we found no difference between individual settlement types either before or during the COVID-19 epidemic. Thus, our fourth hypothesis was not confirmed.

With regard to sports habits, it can be said that running and jogging proved to be the most popular in both populations during the declaration of the emergency. Running and jogging have doubled under restrictions among college students, while other forms of sport have declined, but not significantly. Among young adults, it can be said that all forms of movement have decreased, but we found a marked

difference only in connection with the activities done with music and dancing. We can assume that the university faculties tried to keep the various movement courses online, so they stopped moving less (Gósi and Magyar, 2020).

Our research results have demonstrated and confirmed the results of several studies to date that the COVID-19 pandemic has markedly reduced the level of PA among students as well as young adults. The results of the research may provide guidance for a possible subsequent closure, and we can assume that a new closure may cause a similar downward trend. In our opinion, with the help of our research results, decision-makers can be more prepared, with the help of proper coordination and organization, they can provide space for online trainings. In the future, it would be worthwhile to compare a representative sample of the population and the university population based on the hypotheses we examined. It would be worthwhile to examine the extent to which the number of online workouts increased during COVID-19 closure and how the PA of the populations studied changed after the emergency.

The limitations of our research included the fact that the university population was not considered to be represented, and our questionnaire was filled in only by the students of the University of Pécs. In the future, it would be worthwhile to involve all universities in Hungary in the study.

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**UNIVERSITY SPORTS IN THE SERVICE OF HEALTH EDUCATION:  
SPORTS HABITS AND MOTIVATIONS OF STUDENTS AT THE  
UNIVERSITY OF SZEGED**

**EGYETEMI SPORT AZ EGÉSZSÉGNEVELÉS SZOLGÁLATÁBAN: A  
HALLGATÓK SPORTOLÁSI SZOKÁSAI ÉS SPORTMOTIVÁCIÓI A  
SZEGEDI TUDOMÁNYEGYETEMEN**

**ABSTRACT**

**Objective:** In our research we sought to answer the question of whether the participation of Szeged students in health-promoting recreational sports has changed in the last decade. We were also curious about the level at which the students of the University of Szeged (SZTE) are involved in sports activities, what sports, venues, services, organization they prefer, and whether gender differences can be detected in connection with all this.

**Hypotheses:** We assumed that the proportion of those who did sports at least 2-3 times a week was to increase. The primary aims of the students were to include relaxation and the preservation of health, thus, various fitness types would represent the most popular forms of physical activity. The majority of students was to be involved in sports activities outside

the university's framework, respecting affordability as the most important factor. It was supposed that men do sports and participate in competitions more frequently than women.

**Materials and methods:** Our primary research was conducted with the survey method, we targeted voluntary students using the e-study system of the university. The questionnaire were filled in by 2711 students (17% of whole population), out of which, following data cleaning, a total of n=2,621 remained in the sample. Data were then analyzed using the methods of descriptive statistics. Pearson's Chi square ( $\chi^2$ ) test was used in order to explore the relation between categorical variables.

**Results:** The proportion of students who do regular physical activity has been doubled. According to frequency of rec-

reational physical activity women were significantly more physically active than men. Those types of physical activity in which the cost implications were lower proved to be the most popular. Women were less open to competitive sports than men. The aims of the majority included stress relief and the preservation of health. Three fourths of students organized their physical activity on their own, but while men prefer sports in groups and sports communities, women preferred to exercise at home. When choosing a sports provider it was affordability and accessibility of the sports venue that played the most significant role.

**Conclusions:** Our hypotheses, except for one, have all been justified by research. Contrary to the expectations, the frequency of doing sports were significantly higher by women than men.

**Keywords:** university sports, physical activity, sports motivation, sports consumption, University of Szeged

### ABSZTRAKT

**Célkitűzés:** Kutatásunk során arra kerestük a választ, hogy változott-e a szegedi egyetemisták részvétele az egészségfejlesztő rekreációs sportban az utóbbi évtizedben. Kíváncsiak voltunk arra is, hogy a Szegedi Tudományegyetem (SZTE) hallgatói milyen szinten sportolnak, mi-féle sportágakat, helyszíneket, szolgáltatásokat, szervezetséget preferálnak, illetve kimutathatók-e nemenkénti eltérések mindezekkel kapcsolatban.

**Hipotézisek:** Feltételeztük, hogy a legalább heti 2-3 alkalommal sportolók aránya növekedett az utolsó felmérés

óta; a sportoló egyetemisták célja a kapcsolódás és az egészségmegőrzés; a legnépszerűbb mozgásformák közé a fitneszirányzatok tartoznak; a legtöbben nem választanak szervezett kereteket a testmozgáshoz; a sportágválasztás legfontosabb szempontja a megfizethetőség. Valószínűsítettük továbbá, hogy a férfiak gyakrabban sportolnak és versenyeznek, mint a nők.

**Anyag és módszer:** Adataink lekérdezése az egyetemi elektronikus tanulmányi rendszeren keresztül, önkitöltős kérdőív segítségével valósult meg. A kérdőívet, 2711-en töltötték ki (a teljes populáció 17%-a), amiből adattisztítást követően  $n=2621$  állt rendelkezésünkre. A leíró statisztika módszerei mellett a kategóriális változók közötti kapcsolat feltárására a Pearson-féle Khi négyzet ( $\chi^2$ ) próbát használtunk.

**Eredmények:** Az előző felmérés óta a legalább egészségfejlesztő szintű testmozgást végző hallgatók aránya megduplázódott. A nők rekreációs sportolási gyakorisága szignifikánsan felülmúlta a férfiakét. A fitneszirányzatok és a kisebb költségvonzatú sportágak bizonyultak a legnépszerűbbnek. A legtöbben a feszültségoldás és az egészségmegőrzés céljából mozognak és a nők kevésbé nyitottak a versenyzésre, mint a férfiak. A hallgatók háromnegyed része maga szervezi testmozgását, de a férfiak gyakrabban sportolnak közösségben, míg a nők szívesebben mozognak otthon. A sportszolgáltatás kiválasztásában a megfizethetőség és a megközelíthetőség a legfontosabb szempont.

**Következtetések:** Hipotéziseink egy kivételével beigazolódtak. A várt eredménnyel szemben ugyanis a nők a rekreációs sportolási gyakorisága felülmúlta a férfiakét.

**Kulcsszavak:** egyetemi sport, fizikai aktivitás, sportmotiváció, sportfogyasztás, Szegedi Tudományegyetem

### Introduction

It is the task and the responsibility of each institution of higher education to contribute actively to the development of health behavior of its students by offering them appropriate supportive environment. Higher education is almost the last opportunity for young adults to do sports free of charge and consciously develop a positive attitude to physical exercise (Pfau, 2017). Regular physical activity and former sports activities are factors that can later lead to an individual's increased sports consumption, as well as to spending more money on it (Paár et al., 2021). In addition, engagement in physical activities can mediate a pattern toward the individual's narrower and wider environment, thus it can contribute to greater health benefit in the entire society (Kraiciné, 2016). Increased physical activity also improves labor market opportunities for the workforce (Filo and Nagy, 2019). This is how sports transforms the seemingly intangible values, inherent in sportsmen, into the main tool of value creation (Stocker, 2013). It may mark the beginning of a hopeful tendency, that, in Hungary the GDP-proportionate state burdens of diseases caused by physical inactivity, have shown a diminishing ten-

dency in the past few decades (Ács et al., 2020a; Ács et al. 2020b).

The aim of sports in higher education is the popularization of physical activity in the widest possible circles of university students, with the aim of health improvement. Regular physical activity is almost the only possibility for university students to maintain and improve their physical and mental health and to eliminate the negative consequences of too much learning and sitting which are parts of their lifestyle. Another goal of university sports is to "entice" the university staff into the sports field, so that physical education could be a part of the university lifestyle as widely as possible (Bartha and Bartha, 2018). Both leisure time sports and competitive sports, when pursued at universities, require special institutional infrastructure, organization and organizational structure, and, with their specific norms, value system and rules they all contribute to the effectiveness of physical activities (Balogh, 2015; Györi, 2019).

Sports is one of the main components of university life; in addition to enriching someone's personality, it is also an important factor in community development: students who do sports can more easily form social relationships, and, they are not characterized by social exclusion either (Page et al., 2007; Földesi, 2010; Keresztes et al., 2014). On the other hand, it needs to be added, that physical activity, as well as related social activities - similarly to other social activities - are influenced by social and territorial factors: students, who repre-

sent higher social status and, also those, who come from more populous towns do sports more actively (Kovács, 2011). The research results of Kovács (2017) support the idea that competitive sports done in secondary schools may contribute to an active sports life carried out by the individual later on at the university. In general, the transition of students between secondary school and higher education is not smooth at all; it means that both the frequency and the intensity of physical activity will decline. The young adult, who used to do sports regularly, on 2-3 occasions a week during his secondary school studies, finds himself at the crossroads at the university: continuing the sports career, or, preparing for civilian life instead (Neulinger, 2007; Bács, 2011). When compared with the earlier generations, the young people of our time give up regular exercises relatively young and they explain it with the lack of time (Laki and Nyerges, 2001; Bauer et al., 2013). But, according to Pfau (2017), the abandonment of regular physical activities cannot be explained with the lack of time; the reason why the young ones tend to discontinue their earlier active life is rather their lack of interest, or the appearance of new, more dominant pastimes. Irregularness, typical of student life, the abundance of other duties and the lack of a true community are also among the causes why students give up on sports at the beginning of their university studies (Palusek and Székely, 2020). Currently, higher education in Hungary makes it possible for 280,000 students to study at a variety of institutions and

become part of the intelligentsia later. 200,000 of them do their studies as full-time students (Central Statistical Office, 2018). Survey results of the Education Office show (n=16,758), that the frequency of sports activities done by Hungarian higher education students is below the desired minimum level: 28.8% of them is engaged in physical activities less frequently than weekly, 42.2% does sport once a week, and only 23.0% is engaged in some kind of sports activity at least 2-3 times per week, occasionally for a minimum of 30-40 minutes (Székely, 2015). This representative survey was repeated in 2019 (n=6,558) and the results have not shown any significant change concerning the sports frequency of university students; the slightly higher figures practically mean improvement to a negligent extent and were all within the margin of error (Palusek and Székely, 2020).

Higher education sports services and the environment they operate in, are significantly different from institution to institution. Sports service means using the available resources with the aim of creating 'added value' in the physical condition of the sports consumer (Demeter and Gelei, 2002). The environment includes those resources which are helpful in creating the 'added value'. When adapting the system Stocker and his colleagues (2015) brought about, several groups of resources are to be identified. These are as follow: tangible resources (e.g. the characteristics of sports in a given settlement including sports facilities, sports equipment, financial instruments),



human capital resources (e.g. the socio-demographic composition, motivation, cooperative and communication skills of students and teaching staff), social capital resources (e.g. the professional relationships within the university, sports clubs, sports associations, strategic partners, sponsors, brand image and reputation), and organizational capital resources (e.g. hierarchic relationships, formal and informal systems of planning and sharing tasks, tacit knowledge and organizational culture). The role of any university's sports strategy is to coordinate all these factors within the given legal and regulatory framework.

The University of Szeged (SZTE) is the knowledge centre of Hungary's Southern Great Plain region; it has 12 faculties, and it is considered a large university at national level, too. The fourth largest university of Hungary has approximately 8,000 employees and can be characterized by an institutional infrastructure of an area of 400,000 m<sup>2</sup>, which can accommodate 23,000 persons. It is important to note that the SZTE is an active participant in the processes of internationalization: due to the expanding variety of training programs on offer and the university's efficiency in the recruiting process, the international students of the university are increasing in number and currently they represent many faraway regions of the world as well (Györi, 2018). In 2010 at the SZTE there were students from 39 countries, while in 2013 the number of countries was 83; in 2016 as many as 105 countries sent a total of 3,208 students to the university of Szeged, a town on the

banks of the Tisza River. On the basis of these figures, it can be assumed that those students who come mostly from Western Europe, from countries representing more developed leisure time sports culture, will generate a higher demand for sports at the university in the future.

In addition, in 2016 there was a national survey initiated by the National Union of Students, and its results (MEFS, 2016) pointed out that only 18.7% of the students of the SZTE do sports at least 2-3 times a week, a frequency, that would make it possible for them to preserve their good health. This figure is below the national university average (23.0%). Considering this indicator, the SZTE is the 27th in the list of the surveyed 41 universities, meaning, that it has a place at the beginning of the last third of the rankings. The figures given by Keresztes and his colleagues (2014) are somewhat different. According to their investigations it was 38.6% of SZTE students who did sports three times a week, a recommended frequency. This figure is not too high, either.

Although the University of Szeged offers sports services to its students, but those definitely need to be further developed. The sports and recreational services of the SZTE include various levels of students' sports activities, ranging from compulsory Physical Education (henceforth: PE) classes (2 semesters) to recreational and elite sports. The compulsory PE classes are taught by teachers of the SZTE Sports Centre: they teach approximately 6,000 students per semester, who can choose from 300 courses represent-

ing more than 30 types of sports. Additional tasks of the Sports Centre include to prepare their students for competitions and have them compete in university sports events. In addition, the Centre is in charge of organizing a variety of recreational events, including for example skating, swimming and water sports programs, ski camps. Considering the human resources of the university's sports services, it includes sports professionals and service staff, while the objectified resources contain items of the necessary infrastructure, for example, sports grounds, sports equipment, sports lab.

Offering students sports services is much more, than the mere provision of sports; there are related investigations as well, including fitness, sports diagnostic and sports health surveys, all of which serve the bases for thorough sports science research. The research into these related areas can be done through the cooperation of several university departments and institutes: the university's Institute of Physical Education and Sports Science, responsible for coaching and PE teacher training, is at the forefront of these activities. Within the framework of the Széchenyi 2020 program, the institute coordinated a 4-year project, which, in general, was aimed to improve quality in higher education (EFOP-3.4.3-16). The Institute's Health Education subproject took place within this major project and it was primarily aimed at promoting university sports and popularizing physical activities among students in order to improve their health.

Preceding this project work the Hungari-

an University Sports Federation (MEFS) had prepared its professional program plan concerning recreational and competitive sports in Hungary's institutions of higher education (2013), and had put it into social debate. The Alfréd Hajós Plan was then submitted to the minister in charge of sports politics by the Hungarian Olympic Committee. In this document – in accordance with the main ideas to be found in the mission statement of the International University Sports Federation (FISU) – recommendations and precise instructions were given in connection with the support of university sports, physical education, leisure time sports and the development of sports infrastructure in higher education. The program offered outstanding support for those types of sports, which, in general, are able to attract masses of students (MEFS, 2013). Within the framework of the Alfréd Hajós Plan, the SZTE and the MEFS signed an agreement for cooperation, and as part of it, the SZTE undertook the development of sports services for its students together with the elaboration of a more efficient communication strategy. In addition, a sports developmental program was elaborated, which was aligned with the university's Plan for Institutional Development. Within the framework of the Health Education subproject, the areas focusing on students' health education and the institution's sports services were added to the institution's professional profile: new sports and health programs and services were elaborated and the existing ones were improved. With the implementation of creative online ideas

– taking the advantage of the advent of information technology and digital connections in sports (Bartha et al. 2021) –, the sub-project even performed excellently when the coercive measures caused by COVID-19 led to a significant decline in physical activity across the country according to the surveys (Morvay-Sey et al., 2020).

In addition, the best athletes of the university got additional support through a system of special scholarships and career models, and, as a result, the university was able to acquire the right to use its name in several famous sports teams, including the Naturtex SZTE-SZEDEÁK men's basketball team and the Szeged SZTE women's water polo team.

### **Objective**

Our research is aimed to explore the sports motivation and sports consumption of the students of the University of Szeged, using the results of a questionnaire-based survey. We want to find answers to the question about the changes of sports activities done by the students in the past decade. In our research it is the recreational sports that are primarily considered, and, in connection with them we want to find out details concerning the sporting level of students, the types of sports, the venues, the services and the organizational background they prefer. Also, we are eager to investigate and quantify gender-related differences in our group of respondents.

### **Hypotheses**

Based on our research into specialist lit-

erature our hypotheses are as follow:

First, it is assumed (H1) that the proportion of those students who do sports at least 2-3 times a week - a frequency, essential for the preservation of good health – is to increase in the last decade; (H2) men tend to do sports more frequently, then women; (H3) it is the various fitness activities which are the most popular with students; (H4) men participate in competitions more frequently than women; (H5) the most significant motivational factors of student sports are recreation and the preservation of good health; (H6) the proportion of those who do sports in an organized form is low; (H7) the most significant aspect of choosing a sports provider is affordability. Other research questions include gender-related differences. We also want to find out if it is men or women who prefer community sports, and, also if there are any differences between the two groups concerning their choice of sports venues.

### **Materials and methods**

Data collection took place from September 17, 2020 to October 2, 2020, following the first wave of COVID-19 infections; it was the period, when the epidemic restrictions were lifted and the students were allowed to return to their classes and participate in their regular social activities. In the survey anonymous online questionnaires were used and they were published in COOSPACE, the digital study system of the SZTE. The questionnaires were sent out to a total of 16,393 students and 2,711 (17%) of them filled them in. After data cleaning, 2,621 ques-

tionnaires were eventually analyzed; in the group of respondents there were 928 men (35.4%) and 1,693 women (64.6%). The questionnaires, compiled by staff from the Institute of Physical Education and Sports Science, as well as from the Directorate for Quality Management and Strategy, had 23 closed and 7 open questions. The questionnaire focused on basic sociodemographic data (gender, age, education, place of residence), anthropometric details (height, weight), as well as on leisure time and sports consumption habits of respondents. Data analysis was performed using the methods of descriptive statistics. In order to explore the relationship between categorical variables Pearson's chi square test ( $\chi^2$ ) was used. Within the framework of this paper the authors aimed to investigate those issues, which are related to students' sports habits and motivations.

### Results

37.4% of respondents is engaged in some kind of sports activity at least twice a week, occasionally they do sports on 4 or 5 occasions, or, some, on a daily basis. 18.4 % of the students of the SZTE answered that they do sports twice or three times a week. The majority of students (38,0%) does sports only once a week, and, approximately 1 out of 5 students is involved in some kind of physical activity once or twice a month. 6.7% of the respondents does not do sports. Although, concerning the frequency of doing some kind of sports activity, similar tendencies can be seen in the group of men and women, the statistical test has

proven some difference between the two groups (Table 1). It is only the group of those, who do sports once a week, that shows no significant difference between men and women (37.5% and 38.2%). In the group of those who do sports on a daily basis, men are overrepresented (8.6% and 6.7%), while in the group of recreational minimalism, i.e. those, who do physical activity at least twice a week, the group of women feature a significantly higher indicator. Approximately 4 women out of ten and only 3 men out of ten do physical activities at least on two occasions per week. It can be concluded from the above that concerning the group of those who do physical exercises only once a month, or, who show total physical inactivity, men perform much worse than women. In conclusion it can be stated that 1-3 occasions per month, which are insufficient from the point of view of health protection, or, concerning total inactivity, men perform much worse than women; although, when examining the results of both men and women, men feature the lowest number of those, too, who do not do sports (7.6 and 6.3%).

*Table 2* illustrates those types of sports which are the most popular with university students. Considering the whole sample, they are given in descending order; the results of men and women are provided separately. It is obvious that in this case a significant difference has been found between the preferences of men and women. Every fourth respondent (25.1%) marked fitness as the most favourite physical activity (conditioning,

Table 1. Frequency of doing sports among the students of the SZTE

1. táblázat: Az SZTE hallgatóinak sportolási gyakorisága

	<b>Total (n=2,621)</b>	<b>Men (n=928)</b>	<b>Women (n=1,693)</b>	$\chi^2$
<b>Frequency of doing sport</b>				40.3%***
Daily	194 (7.4%)	80 (8.6%)	114 (6.7%)	
4-5 occasions per week	303 (11.6%)	91 (9.8%)	212 (12.5%)	
2-3 occasions per week	481 (18.4%)	129 (13.9%)	352 (20.8%)	
Once a week	995 (38.0%)	348 (37.5%)	647 (38.2%)	
1-2 occasions per month	471 (18.0%)	209 (22.5%)	262 (15.5%)	
Never	176 (6.7%)	70 (7.6%)	106 (6.3%)	
<i>Did not respond</i>	1 (0.0%)	1 (0.0%)	-	

Source: Authors' edition

Forrás: saját szerkesztés

activities done with music and dancing). When evaluating the list as a whole, running (9.7%) and cycling (8.4%) were the second and the third, but when the types of sports were separated by gender, in the group of men it was football that was the second (12.6%), cycling the third (11.2%) and running only the fourth. Women marked running (11.9%) after fitness as their second favourite type of physical activities, yoga was the third (11.4%) and cycling was only the fourth. Typically, women were more interested in horseback riding, as well as in yoga. Eight times more women than men chose yoga as their favourite physical activity. When considering endurance sports, swimming has proven the most

popular: in the group of men it was the fifth most popular, while in the group of women it took the seventh place. Martial arts were chosen by twice as many men than women. The table clearly illustrates that, when considering ballgames, men choose basketball, while women opt for volleyball. The popularity of handball is roughly the same in both groups. When considering racket sports (tennis, table tennis, squash) no significant difference was found between the two groups (Table 2).

The questionnaire included a question asking about students' preference of doing sports on their own or, as part of a team. The number of respondents who would do sports on their own slightly

Table 2. The most popular types of sports pursued by the students of the SZTE  
 2. táblázat: Az SZTE hallgatóinak legnépszerűbb sportágai

	<b>Total (n=2,621)</b>	<b>Men (n=928)</b>	<b>Women (n=1,693)</b>	$\chi^2$
<b>Most popular types of sport</b>				47.0***
Fitness	659 (25.1%)	215 (26.6%)	444 (29.5%)	
Running	255 (9.7%)	76 (9.4%)	179 (11.9%)	
Cycling	219 (8.4%)	90 (11.2%)	129 (8.6%)	
Other	203 (7.7%)	96 (11.9%)	107 (7.1%)	
Yoga	183 (7.0%)	11 (1.4%)	172 (11.4%)	
Swimming	138 (5.3%)	53 (6.6%)	85 (5.7%)	
Horseback riding	135 (5.2%)	8 (1.0%)	127 (8.4%)	
Volleyball	124 (4.7%)	23 (2.9%)	101 (6.7%)	
Football	113 (4.3%)	102 (12.6%)	11 (0.7%)	
Martial arts	90 (3.4%)	48 (5.9%)	42 (2.8%)	
Basketball	67 (2.6%)	40 (5.0%)	27 (1.8%)	
Tennis	47 (1.8%)	13 (1.7%)	33 (2.2%)	
Tabletennis	37 (1.4%)	11 (1.4%)	13 (0.9%)	
Squash	14 (0.5%)	7 (0.9%)	7 (0.5%)	
Did not respond	311 (11.9%)	122 (13.0%)	190 (11.2%)	

Source: Authors' edition

Forrás: saját szerkesztés

exceeded the number of those who preferred doing sports in a group. This latter option was more typical of men, while half of the women marked the first option, and the other half marked the sec-

ond alternative (Table 3). In this respect a significant difference was found between the groups of men and women.

The qualitative and quantitative characteristic features of doing sports can best

Table 3. The individual or community face of doing sports among the students of the SZTE

3. táblázat: A sportolás egyéni, vagy közösségi jellege az SZTE hallgatóinak körében

	<b>Total (n=2,621)</b>	<b>Men (n=928)</b>	<b>Women (n=1,693)</b>	$\chi^2$
<b>Doing sports on one's own/ in group</b>				
On one's own	1,154 (44.0%)	360 (38.8%)	794 (46.9%)	13.8***
In a group	1,260 (48.1%)	484 (52.2%)	776 (45.8%)	
<i>Did not respond</i>	207 (7.9%)	84 (9.1%)	123 (7.3%)	

Source: Authors' edition

Forrás: saját szerkesztés

be defined by the level of competitions, a sportsperson is preparing for. The highest level of competitions the students of the SZTE participate in demonstrates a statistically proven difference between men and women (Table 4). According to aggregate results, about half of respondents participates in events and competitions of mass and hobby sports. In this respect there is only a slight difference between the groups of men and women (51.2% and 56.9%). At the same time, at international level, or, at the level of sports associations or regional events (upper three categories), men are represented in higher proportions than women. In international sports events, national championships and county-level or city-level championships the proportion of men's participation was by 8.2 % higher than that of women; this result was due to their more active participation in lower-level (county-level, or city-level) events. The

number and proportion of those who participated in highest-level (international) sports events was low in both groups (20 men, 22 women). In this respect it needs to be added, too, that proportionately fewer women than men can boast with past sports careers and only some of the women plan to participate in competitive sports in the future.

*Table 5* shows the main components of students' motivation. Respondents were able to choose from several categories. Having overviewed the answers to the question 'Who motivated you to start doing sports?', significant statistical differences were found between men and women regarding their answers. In the group of men 76.0% answered that it was their own decision, while in the group of women 77.7% gave the same answer. The second most frequent answer in both groups was the motivation of friends (28.3% and 25.4%), and, the third one



Table 4. The students's attitude to competition at the SZTE  
 4. táblázat: A Szegedi Tudományegyetem hallgatóinak versenyzési szintje

	<b>Total (n=2,621)</b>	<b>Men (n=928)</b>	<b>Women (n=1,693)</b>	$\chi^2$
<b>Level of competitions</b>				51.7***
International competitions	42 (1.6 %)	20 (2.4%)	22 (1.4%)	
National competitions, Hungarian University Sports Federation	137 (5.3%)	57 (6.8%)	80 (5.1%)	
County-level and city-level competitions	152 (5.8%)	84 (9.9%)	68 (4.4%)	
Mass and hobby sports	1,321 (50.4%)	433 (51.2%)	888 (56.9%)	
Did not participate in competitions but will likely do it	58 (2.2%)	28 (3.3%)	30 (1.8%)	
Did not participate in competitions and does not plan to do it	697 (26.6%)	223 (26.4%)	474 (30.3%)	
Did not respond	214 (8.2%)	83 (8.9%)	131 (7.7%)	

Source: Authors' edition

Forrás: saját szerkesztés

was the influence of parents (18.7% and 20.1%). Social environment was marked by the students as the fourth most important factor. In case of men the fifth motivation was that of a famous sportsman (7.8%), while women's answers marked the influence of their sibling(s) instead as an important one (3.2%). In the group of men siblings played a less important role and they marked them only as the 6th most important influence (5.3%). In the group of women it was their PE teacher who played the 6th most important role. In the 7th place men marked their

relatives, while their PE teachers got the fewest votes and came as the 8th, the last one on the list (4.3%). In the group of women the last two places went to the categories of 'Famous sportsperson' and 'Relatives'.

Considering the aim of students, on the basis of our questionnaire-based survey, there was no significant difference between the groups of men and women (Regarding the answers to the question 'What was your main aim with doing sports?', the statistical test did not show any significant difference by gender. Out

Table 5. The students' sports motivation at the SZTE  
 5. táblázat: Az SZTE hallgatóinak sportmotivációi

	Men (n=928)	Women (n=1,693)	$\chi^2$
<b>Motivating person(s)*</b>			51.7***
Oneself	20 (2.4%)	22 (1.4%)	
Parent	57 (6.8%)	80 (5.1%)	
Sibling	84 (9.9%)	68 (4.4%)	
Relative	433 (51.2%)	888 (56.9%)	
PE teacher	28 (3.3%)	30 (1.8%)	
Friend	223 (26.4%)	474 (30.3%)	
Social environment	124 (13.4%)	215 (12.9%)	
Famous sportsperson	73 (7.8%)	55 (3.2%)	
Did not respond	85 (9.1%)	140 (8.3%)	
<b>Motivation*</b>			
More beautiful appearance			
(body shaping)	537 (57.8%)	984 (58.1%)	
Achievements	87 (9.4%)	137 (8.0%)	
Preservation of health	609 (65.6%)	1,131 (66.8%)	
Stress relief, recreation	590 (63.5%)	1,138 (67.2%)	
Company	154 (16.5%)	310 (18.3%)	
Other	15 (1.6%)	34 (2.0%)	
Did not respond	91 (9.8%)	148 (8.7%)	

\*Note: respondents could mark several categories.

Source: Authors' edition

Forrás: saját szerkesztés

Table 6. Venues and the organization of sports done by the students of the SZTE  
 6. táblázat: Az SZTE hallgatóinak sportolási helyszínei és szervezeti keretei

	Men (n=928)	Women (n=1,693)	$\chi^2$
<b>Where do you do sports? *</b>			51.7***
In specialized areas	410 (44.1%)	697 (41.1%)	
Parks, public areas	376 (40.5%)	615 (36.3%)	
<i>Dormitory</i>	72 (7.5%)	110 (6.5%)	
<i>At home</i>	289 (31.1%)	776 (45.8%)	
<i>University sports facility</i>	109 (11.7%)	207 (12.2%)	
<i>Association sports grounds</i>	135 (14.5%)	129 (7.6%)	
Did not respond	85 (9.1%)	124 (7.3%)	
<b>Who organizes your sports activities?*</b>			49.7***
SZTE	50 (5.3%)	116 (6.8%)	
EHÖK SE (Students' Government Sports Assoc.)	4 (0.4%)	1 (0.1%)	
Szeged Recreational Sports Club	4 ( 0.4%)	6 (0.3%)	
Sports Club outside the university	204 (21.9%)	306 (18.0%)	
With friends	354 (38.1%)	493 (29.1%)	
On one's own	616 (66.3%)	1,230 (72.6%)	
<i>Did not respond</i>	87 (9.3%)	140 (8.2%)	

\*Note: respondents could mark several categories.

Source: Authors' edition

Forrás: saját szerkesztés

of 10 respondents 6-7 men and women answered that they do sports to preserve their health. The same result applies to those respondents, who, by doing sports, intend to relieve their stress and anxiety levels. 6 respondents selected body shaping as their main goal. Only 2 people out of ten do sports with the aim of 'enjoying' the company of other people, and only 1 person in each group was interested in sports performance, i.e. in being successful (Table 5).

Answering the question referring to the place where students prefer to do sports, there was a statistically verifiable difference regarding the answers of men and women (Table 6). Approximately half of the men (44.1%) answered that they do sports in special sports rooms (gym, fitness room). Many of them (40.5%) use outdoor areas in parks or other public areas for sports recreational purposes (running tracks, outdoor fitness tools), while approximately one third of respondents (31.1%) does physical activities in their homes. Respondents marked other places, such as sports associations and university facilities, or dormitories to a much lesser extent.

Many women (45.8%), when doing physical activities, prefer their homes to public places. 41.1% of them frequent the sports facilities of service providers, while about two fifths of them (36.3%) like public areas and parks as well. The university and sports association facilities, as well as the dormitories are among the least frequented places.

When considering the organizational forms of sport, proportionately some dif-

ferences can be identified between men and women. 73.2% of men and 79.2% of women prefer to organize their own sports activities. Men tend to organize their own activities together with friends in a higher proportion than women (66.3% and 72.6%). The differences are less significant, but men tend to participate in association sports in higher numbers, than women (21.9% vs 18.0%). It is only a small proportion of students who do sports activities organized by the university's Sports Centre or the Institute of Physical Education and Sports Science (Men: 5.3%, women: 6.8%). The university-related organization, the Szeged Recreational Sports Club and the Sports Association of the Student Government (EHÖK SE) offer sports possibilities for only a very small number of students.

The results in the category of sports provision were not significantly different between men and women. This is why the points are given without dividing the category by gender (Table 7). The first question intended to enquire about students' preferences concerning service providers in sports (several answers could be marked). Respondents thought that the most important point is the affordable price (69.7%). Then, easy accessibility followed (44.4%) and the long opening hours (34.9%). These aspects are followed by the opportunity of doing quality sports in the given sports type, high quality facilities, well-prepared experts and the possibility to choose from a broad range of sports. It was only a few respondents who underlined the importance of factors such as the circle of

guests and visitors, the external physical circumstances and the availability of supplementary services.

When being asked about the use of fee-paying services, 41,0% of the respondents answered with 'yes' and a little more than half of them said that they do not use fee-paying services (50.6%).

In the group of those who pay for the chosen service students pay a monthly 6,000-10,000 HUF (28.2%), or, 4,000-6,000 HUF (26.1%). One third of the students pays less than 4,000 HUF per month and about 13.5% pay more than 10,000 HUF.

### **Discussion and conclusions**

In specialist literature in Hungary most experts agree that at Hungarian universities the proportion of students who do sports at Hungarian universities is at least 60% of the entire student population (Kosztin and Balatoni, 2021). In our research we have come to the conclusion that the portion of students at the University of Szeged who do sports at least once a week is 75.4%, which is a very favourable ratio. After the analysis of the data of our large immersion sample it can be stated that the proportion of students who do sports on two or three occasions a week, a frequency, necessary for good health, has doubled (18.7% vs. 37.4%) since the last surveys conducted in 2011 (n=1,333) and 2016 (MEFS). This figure is in accordance with the one, calculated by the Office of Education in 2019 during a research into the way of life of university students in Hungary. At the University of Szeged the representative sample was

431 (n=431) and the percentage reached 37.3%.

The proportion of those students who regularly do sports (1x per week) was found significantly higher (17.2% vs 38.0%) and those who do sports only rarely or do not do sports at all was found lower (45.5% vs 24.7%) by our current research. Our indicators concerning students' physical activities are more favourable than the results of Fábri's survey (Fábri, 2002), who concluded that one third of the students was active in sports. In addition, our figures are higher than those of Kovács (2011), who measured students' physical activity at the University of Debrecen. The good results achieved at the University of Szeged are definitely due to the high quality professional work of our experts, as well as the extra finances, provided by the health education subproject of the EFOP-3.4.3-16 project in the period from 2017 to 2021. On the other hand, our investigations do not support those widespread statements common in specialist literature (Kosztin and Balatoni, 2021), according to which men tend to do sports in larger numbers than women. In our sample, in relation to the two-occasion-weekly recreational minimum, women have achieved significantly better results than men. It was only the category of daily sports activities where men surpassed women.

Concerning the choice of a certain type of sports, our results are in accordance with the general tendencies of student sports. Former surveys have already made it clear that it is the categories of accessibility, as well as moderate financ-

Table 7. The importance of issues for students of the SZTE when choosing a sports service provider

7. táblázat: A sportszolgáltatás kiválasztásának szempontjai az SZTE hallgatóinak körében

<b>Total sample n=2,621 (%)</b>	
<b>Issues in the area of recreational services*</b>	
Affordable price	1,829 (69.7%)
Easy accessibility	1,165 (44.4%)
<i>Long opening hours</i>	917 (34.9%)
<i>Opportunity to do quality sports</i>	909 (34.6%)
<i>Quality condition</i>	710 (27.0%)
<i>Well-prepared experts</i>	628 (23.9%)
Opportunity to choose from a range of sports	511 (19.5%)
Guest- and visitor circle	155 (5.9%)
External physical circumstances	51 (1.9%)
Supplementary services	40 (1.5%)
Did not respond	224 (8.5%)
<b>Use of fee-paying services</b>	
Yes	1,074 (41.0%)
No	1,327 (50.6%)
Did not respond	220 (8.4%)
<b>Monthly expenditure on the chosen sports service (n=1,293)</b>	
Less than 2,000 HUF	176 (13.6%)
2,000-4,000 HUF	241 (18.6%)
4,000-6,000 HUF	337 (26.1%)
6,000-10,000 HUF	365 (28.2%)
more than 10,000 HUF	174 (13.5%)
Did not respond	1,328 (50.0%)

\*Note: Respondents could mark several categories.

Source: Authors' edition

Forrás: saját szerkesztés

es (no fees) are the most important factors for students when choosing a type of recreational activities or sports (Pfau, 2017). Various fitness trends are the most popular at the University of Szeged. Fitness is followed by types of sports with less cost implications, for example, running and cycling. As we have seen, men's choice of types of sports significantly differs from the preferences of women. In the group of men it is football, basketball and martial arts, which are among the most popular sports, while women are more interested in yoga, horseback riding and volleyball. A larger proportion of students at the University of Szeged, primarily men, prefer doing sports with friends than doing physical activities on their own.

The results seem to be more favourable concerning the category of competitive sports, than those published in specialist literature. Kovács (2017) estimated that the proportion of students who do sports for recreational purposes is about 10-20%, and, in his view, the percentage of those, who do competitive sports is only between 3-6%. According to Pfau's research (2014) in Debrecen, the competitors' proportion was 6.5%. By comparison, half of the students who were asked at the University of Szeged answered, that they do participate in hobby sports and mass sports competitions; also, it was 12.7% of the students who take part in sports competitions at international, national, sports association, county- or local levels. At the same time there is a statistically proven difference between men and women concerning

their participation in sports competitions: it is the group of men who participate in larger proportion in international, national, county-level and local sports events, while women in general do competitive sports in smaller numbers and they do not plan future sports careers either.

Our research included the topic of sports motivation as well. According to specialist literature the preservation of health, recreation and the enjoyment of physical activities represent the main factors in student motivation (Neulinger, 2007; Szabó, 2013; Kovács, 2011). This statement is supported by our own research, too, since approximately three fourths of our respondents made similar statements. The surveys done in Győr and Veszprém emphasized the significance of attractive appearance as one of the main factors of motivation in case of women (Pfau, 2014). Székely and Palusek (2021) also pointed out that appearance is getting more and more attention. Our survey supports the very same idea: what is more, it was not only the group of women, but two thirds of men's answers marked that achieving a more attractive appearance was among their priorities. The majority of respondents (men 76,0%, women 77,7%) started to do sports on their own decision. In case of men it was the social environment, the persuasion of friends that also played a significant role in decision making, while women tended to be initially influenced by parents, family members and their PE teachers.

In one part of our research there were questions concerning the sports venues the students of the University of Szeged



attended, as well as the organizational background to their activities. Three fourths of both men and women organize their sports activities themselves, but, apart from this similarity, there are some differences between the two groups. It is a larger proportion of men than women who prefer to do sports or to go to training sessions together with their friends. Relatively few students do sports within the framework of university organizations (men 5.3%, women 6,8%), while about one fourth of men and one fifth of women are engaged in sports activities in a variety of sports clubs and sports associations. These figures to a large extent reflect the attitude of the entire adult Hungarian population as measured by the Eurobarometer 472 (2018). This collection of surveys in relation to EU countries informs readers about sports habits within the EU as well. There were 472 (2018) representative ( $N^{EU}=128,031$ ,  $N^{HU}=1,038$ ) surveys conducted and according to the latest data of 2017, it was only 4 % of the adult Hungarian sports-people, who were members of sports associations. This figure is only about one third of the EU average. Unfortunately, at the University of Szeged, in comparison with total student numbers, currently the sports-related NGO-s (sports clubs) are only minimally able to meet students' need in the area of sports and recreational activities.

There were statistically verifiable differences between the preferences of men and women regarding sports venues. Both men and women like to use the facilities of sports providers, but men

tend to use the recreational possibilities offered by public areas and the facilities belonging to a variety of sports associations in larger proportions. On the other hand, women tend to do physical activities in their homes. It was only 1 student out of 8 respondents who uses the sports facilities of the University of Szeged.

On the basis of our survey it can be concluded, that, the basic aspects of choosing sports providers do not have significant differences between the groups of men and women. Similarly to Szabó's research (2013) conducted in Debrecen, the majority of respondents considered the payable fees as the main factor influencing their choice. The accessibility of the sports venue was the second most important issue for them. In addition, according to the marked answers, the long opening hours, the possibilities to be engaged in quality sports, and the high quality of sports facilities also play a role for them.

Although, according to Szabó (2013), the fee-paying sports services offered at the University of Szeged are more varied and more colourful than those of other universities, as the results of our own research show, it is only two fifths of the students who are willing to pay for sports services; at the time of the survey this sum was from 4,000 to 10,000 HUF per person per month.

This paper investigated the sports habits and motivations of students at the University of Szeged; the data were obtained with the help of an online questionnaire. The research used large sample, and it was able to reach 17.0% of the univer-

sity's student population. The issues the questionnaire focused on included students' sports frequency, motivation, the distribution by types of sports, levels of competitions, as well as the choice of sports venues, organizations, and students' preferences when choosing sports providers. Our analysis was carried out using the methods of descriptive statistics.

Our hypotheses, except for one, have all been justified by research. (H1): On the basis of this analysis it can be stated, that the proportion of those students who regularly do sports, at least on 2 or 3 occasions weekly (a frequency, that can be called a minimum from the point of view of health preservation), has actually doubled in the last decade. (H2): Contrary to the expectations, the frequency of doing sports in the group of women surpassed the frequency of men. Women achieved significantly better results in the area of regular recreational sports activities than men, who, on the other hand, surpassed the group of women in the categories of daily, and at the other end of the scale, in random sports activities, as well as in inactivity. (H3): The students' choice of type of sports reflects the general tendencies of university sports: various fitness trends as well as low-cost sports activities are among the most popular ones, but, there is a difference concerning the preferences of men and women. Student athletes go to various competitions; those students who do recreational sports are ready to attend hobby sports and mass sports events. (H4): It is the men who outnumber women in their readiness to

participate in sports competitions at international, sports association and other levels. Women are less open to compete. (H5): When evaluating the motivations of the students of the University of Szeged, it can be seen that stress relief, recreation, health preservation and body shaping are the factors that primarily motivate them. While men are influenced by their social environment and friends when starting to do sports, women are rather encouraged by parents, family members and their PE teachers. (H6): Three fourths of the respondents organize their sports activities on their own, but men more frequently do sports activities together with friends, or, within the framework of a sports association than women. Consequently, men use sports association facilities, sports grounds, or, outdoor recreational facilities in larger proportions, than women. When doing sports or recreational activities, women prefer their own homes. The sports facilities of the University of Szeged are used by a relatively small number of students. (H7): When choosing a sports provider, low costs, long opening hours and easy accessibility are the most important factors for students. Less than half of the students use fee-paying sports services.

Eventually, the limitations of our research also need to be mentioned. When interpreting the data received, it needs to be considered that the survey was done using a questionnaire, which was compiled with the purpose of enquiring about sports habits. This fact may mean that the questionnaire was primarily filled in by proportionately more students who are

active in sports, and those, who are not interested in physical activities, did not participate in the survey. This characteristic feature occasionally may have led researchers to the overestimation of sports frequency. Further, it needs to be considered, too, that more women (n=1,693) than men (n=928) participated in our survey. It is not surprising, since, when surveys are conducted on a voluntary basis, in general women are more willing to fill in questionnaires, than men. In summary, it is thought, that our research can provide valuable data for the further development of university sports in Hungary in general, meanwhile, it may promote the health education of the current and future generations of students. Considering the practical implications of the research, it offers several strong points for the University of Szeged, too, namely, it hints at how to prepare and improve its sports services and infrastructure. At the same time, sports professionals, experts and managers can also find useful information in our survey results.

Eventually, we would like to express our gratitude to the staff of the University's Directorate for Quality Management and Strategy, to the members of the Institute of Physical Education and Sports Science, as well as to the teachers of the SZTE Sports Centre for their enthusiasm and perseverance in carrying out this research.

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## AN ONLINE LEISURE SPORTS EVENT FOR UNIVERSITY STUDENTS - THROUGH THE EXAMPLE OF BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS

### EGYETEMI HALLGATÓK ONLINE SZABADIDŐS SPORTRENDEZVÉNYE - A BUDAPESTI MŰSZAKI ÉS GAZDASÁGTUDOMÁNYI EGYETEM PÉLDÁJÁN KERESZTÜL

#### Abstract

**Objective:** The importance of regular exercise, university sport (competition and leisure) in case of young adults is known to everyone. Tertiary education is the last institutional frame which provides the possibility of regular exercise and makes available programmes for the future intelligentsia which improve life quality and develop health consciousness as well. We were curious to find out what effects the COVID-19 pandemic had on university sport and how the online organisation and implementation of sports events influence the life of athletes and sports organisers.

**Hypothesis:** We assumed that the global pandemic situation, the partial disruption of sports life (the suspension of championships) and the stoppage of travelling had a negative effect on student exercise habits. We assumed that connecting on-

line platforms and sports does not support having a healthy lifestyle. We also assumed that the already low number of participants taking part in university running races will decrease dramatically.

**Materials and methods:** In our study we used a mixed type of research. In the present case we combined qualitative and quantitative methods. We chose interview as qualitative research method and survey as quantitative. We have conducted 25 interviews (physical education teachers, university students and an Olympic long-distance runner and our survey was filled by n=320 students. Among descriptive statistics, we used t test, Pearson's chi-square ( $\chi^2$ ), Cramer V and cluster analysis.

**Results:** Organising sports events on online platforms resulted in unexpected success and outcome. The stoppage and disruption, the sedentary period and lack



of leisure sports events, competitions showed an increase in the need for exercise. The digitalisation resulted in new ways of competing, doing exercise and organising sports events. Results and evaluations ranging within wide boundaries came to life and the sociometric analysis did not issue in the expected results, either.

**Conclusions:** Moving online, sport and digitalisation do not push off, on the contrary, bring closer those parameters which can be used to induce quality changes in leisure sport. Moreover, they can provide material for researches essential in the field of leisure sport development in the 21<sup>st</sup> century.

**Keywords:** physical activity, COVID-19, online sport, leisure sport, sports event

### Absztrakt

**Célkitűzés:** A rendszeres testmozgás és a fiatal felnőttek egyetemi sportolásának (verseny és szabadidő) fontossága mindenki számára ismert. A felsőoktatás az utolsó olyan intézményi keret, amely lehetővé teszi a rendszeres testmozgást, és életminőséget javító, egészségtudatosságot fejlesztő programokat tesz elérhetővé a leendő értelmiség számára. Arra voltunk kíváncsiak, hogy a COVID-19 világjárvány milyen hatással volt az egyetemi sportra, és a sportesemények online szervezése és lebonyolítása hogyan befolyásolja a sportolók és sportszervezők életét.

**Hipotézisek:** Feltételeztük, hogy a globális járványhelyzet, a sportélet részleges megszakadása (bajnokságok felfüggesz-

tése) és az utazások leállása negatívan hatott a tanulók mozgási szokásaira. Feltételeztük, hogy az online platformok és a sport összekapcsolása nem támogatja az egészséges életmódot. Azt is feltételeztük, hogy az egyetemi futóversenyeken részt vevők amúgy is alacsony száma drasztikusan csökkenni fog.

**Anyag és módszerek:** Vizsgálatunkban egyes kutatómódszertant alkalmaztunk, amelyben kvalitatív és kvantitatív módszereket kombináltunk. Kvalitatív kutatási módszernek az interjút, kvantitatívnek pedig a kérdőíves felmérést választottuk. 25 interjút készítettünk (testnevelő tanárokkal, egyetemistákkal és egy olimpiai hosszútávfutóval, valamint a kérdőíves felmérést n=320 hallgató töltötte ki. A leíró statisztikák mellett a t-próbát és a Pearson-féle khi-négyszert ( $\chi^2$ ) próbát, Cramer V-t és klaszterelemzést alkalmaztunk.

**Eredmények:** A sportesemények online platformokon történő szervezése nem várt sikereket és eredményeket hozott. A leállás és fennakadás, a mozgásszegény időszak és a szabadidős sportrendezvények, versenyek hiánya a mozgásigény növekedését mutatta. A digitalizáció a versenyzés, a testedzés és a sportrendezvények újszerű formáit eredményezte. Az eredmények nagyon tág határokon belül szóródtak és a szociometriai elemzés sem hozta a várt eredményt.

**Következtetés:** Az online átállás, a sport és a digitalizáció nem taszítja, éppen ellenkezőleg, közelebb hozza azokat a paramétereket, amelyekkel minőségi változások indukálhatók a szabadidősportban. Sőt, a szabadidősport fejlesztése terén a

21. században elengedhetetlen kutatásokhoz nyújthatnak anyagot.

**Kulcsszavak:** Fizikai aktivitás, COVID-19, online sport, szabadidősport, sportesemények

### Introduction

It is common knowledge that regular sports activity has positive effects on human body. The European Union clearly phrases its directives (2008) regarding the indispensable quantity of regular exercise needed for health preservation, according to which the age group 18-65 is advised to do a minimum of 30 minutes medium intensive exercise five times weekly, but at least 20 minutes high intensity sport three times a week. This quantity of physical activity can add up from 10 minutes intervals containing medium strong and intensive parts (Pálvölgyi et al., 2020). Nowadays free time appears as value, which is spent doing different active and passive recreational activities, the goal of these being relaxation, recreation, ensuring health and ability of work (Boda et al., 2019; Győri, 2020). Increasing the amount of physical activity of the population can be achieved, using several devices of different costs, but their common characteristic is that they are cheaper than medical treatment (Ács et al., 2011). From an economic aspect, in the case of leisure sport the object of exchange is exercise done by us, the opportunity to do sport, the benefits connected to it, as well as the additional services related to sport, means and equipment. In leisure sport the consumer is the athlete who wishes to have fun in an active

way and its effect on health dominates among the goals. In this case the goal is not earning an income, but spending free time and preserving health (András, 2006). Regular exercise, PE lessons and inter-universities competitions are essential in university sport life as well. It is well-known that physical inactivity shows proven close relationship with the risk of development of certain disease groups, adequate physical inactivity bears direct and indirect burdens (Ács et al., 2020a).

Leisure sport creates value at both micro-economic and macro-economic levels. At micro level it develops skills which are important in other areas of life, it can create value for the student individual by preserving, developing and restoring physical and mental health. Healthy people have the abilities which enable them to reach their goals and complete their personality. At macro-economic level decreasing health expenses can also be considered a value creating factor, as it is proven that inactivity is closely related to the risk of the appearance of certain groups of illnesses (Szabó et al., 2021). An exponential risk of inactivity appeared in the period of coronavirus infection. It is true that extremely intensive training can increase the risk of COVID-19. Because of this it is important to adjust the professional training of those wishing to do sport to the new situation in order to keep their fitness and without increasing the risk (Szabó et al., 2020). PE teachers and leisure sport experts have a good reason to believe and avow that the programmes they manage have

a positive impact on education and welfare of the participants in such activities (Snodgrass and Tinsley, 1990). Universities formed their sports concepts in order to provide those sports activities which help university students form a healthier lifestyle, fulfil their lesson tasks, take part in leisure sport events and be acquainted with university professional sport. Central tasks related to sports are carried out by PE teachers, clubs, Student Councils and Sport Offices (Pfau, 2016). Among the researched institutions, leisure sport programmes and events are organised at competitive universities, as well as at ones which focus on physical education and on forming communities based on sport. It can be generally stated that in every case their main goal is to endear sport, to raise awareness in the importance of doing exercise and to form communities. Differences between the institutions can be noticed mainly in the fields of the attitude of the university management, the financial status and the available infrastructure (Györi, 2019). In the case of the institutions dealing with community forming sport events, programmes are organised primarily in order to build student communities and in the meantime a life-long education to health consciousness is also a main purpose. Those institutions can provide outstanding sport life, possibilities (events, occasions) which have organisations created specifically for this (Moravec et al., 2020). Next to institutional sport organisations, university sport associations have an important coordinating and organizing role. With their support

students can take part in several national and regional sport events. Accentuated events are university sport days, national championships (MEFOB), recreation tournaments (UNIVERSITAS) and last but not least home tournaments. The most popular events are basketball and futsal championships, swimming, judo, athletics, fencing and different running competitions. We cannot disregard the fact that more and more sports connect to digitalization in some way. Different sport software help following and analysing results and statistics, as well as live coverages. Of course e-sport events cannot be left out from sport respectively recreation activities, since the games are very popular and there is an increasing demand for them among young adults as well.

At Budapest University of Technology and Economics (BME) beside professional sport leisure sport has always had an emphasized role. Health-conscious education, doing exercise besides studying has always been a guiding principle of the institution. It is not a coincidence that one of the oldest clubs of the country is linked to the Technical University-MAFC 1879. Students can choose from several options. The research of the past twenty years has brought interesting results. The leisure sport of the 90s has transformed completely by now. The initial sports (basketball, volleyball, football, cross training, running) have been completed with extreme sports, some individual sports and new forms of exercise, which have also demanded infrastructural changes (wall-climbing,

squash, ricochet). Nowadays' great challenge under the circumstances of excellent infrastructure is to provide services which make even the youngest generations step out from their digitalized life. According to (Bartha et al., 2021), at BME leisure sport and recreational activities have always had an important role in students' lives. Leisure sport and health preservation jointly provide such social services which are vital human activities. Overcoming stress, doing exercise besides studying is crucial in students' lives. Next to health preservation sport means joy, recreation, excitement and fun. It is true that these are restricted mainly to the period of the activity. Digitalisation, internet and smart phones have already "infected" several generations and of course have also joined in the world of sports. We can examine these impacts from two directions, firstly when they support sport professional activities through innovations and development, secondly when they take away free time and the possibility of doing active sports. A university becomes attractive when next to the quality of education its sport infrastructure and sport services are also outstanding. Nowadays BME corresponds to the above mentioned requirements. Education is high-quality, students doing exercise is supported by a multifunctional sport centre, sport complex and swimming pool. Several teams, unprompted groups and individual athletes are members of university leisure sports life. Unfortunately, coronavirus has affected every area of world economy, this way obviously the world of sport

as well. It did not stand anybody in good stead, but a soaring sector like sport was deeply influenced by lockdowns, disruption of trainings and prohibition of group gatherings. New models and methods had to be thought of so that doing sport could be continued, even if individually and not to cease completely (Ratten, 2020). "COVID-19 world pandemic forced universities to close their doors and keep students outside them. In spite of this, the need for educating students still persisted. The fast pace transition to online education posed a great challenge to Hungarian tertiary education" (Hargitai et al., 2020:2). The past one and a half years put sport life in an extremely difficult position, too. Universities reacted to this unexpected situation very differently in the first round. Online education and work placed the whole society into a new, formerly unknown position. Media focused mainly on economy, politics and professional sport within the area of sports, although several leisure sport events got to the sidelines, this way a lot of people were affected by the crisis. In this difficult situation video games and online sport and strategic activities get an increasing role. E-sport culture came to the front and attracts more and more social classes. The world of gamers expands more intensively and develops among young adults. This increasing demand is well proven by the growth and quality development of Hungarian e-sport communities. A national association was formed, clubs are created and world famous event organising companies came to existence. In our present-day

modern life a lot of factors affect the way of our spending free time. Such an influencing factor can be internet as it is almost unavoidable not to be present in online space, especially as a young person. People keep in touch on social sites, a lot of learning material is accessible online and a great amount of people work and learn at home, in front of their computers, in home-office. Beside these activities, spending free time actively must receive an important role, it can only partly compensate a sedentary lifestyle. People do different active and passive activities in their free time, the goal of which is recreation, rest, relaxation, prevention and health preservation (Kinczel, 2021). In the COVID-19 pandemic and the curfew related to it, the topic of mental and spiritual health along with physical health got special attention and specialists regard them as having an extremely positive and efficient effect on sport (Ács et al., 2020b). In this difficult situation, when everybody was at home and could do physical activity only in restricted groups, the role of digital devices and internet increased. Earlier, concerning sport, internet was mostly used for acquiring information, data analysis and online shopping. University leisure sport had to think about model change, as it had to solve doing exercise for tens of thousands of university students. Leisure sport consumption is consumption regarded in a classical way. The individual who does sport in his/her free time is a consumer in an economic approach, it creates demand for different leisure sport activities, products, facilities and equip-

ment. Entrepreneurs meeting the needs of the market have to know - as in the case of any "goods" - the quantity of demand, which can be found out with the help of market research (Könyves and Müller, 2007). The research of (Juhász et al., 2020) looked for answers to the question whether the appearance of smart devices influenced the relationship of hobby sportspeople towards doing exercise, if they paid more attention to the importance of sport and identical training load. Moreover, they surveyed to what extend keeping track of sport activity and health data (pulse rate, VO<sub>2</sub>) measured with the use of community smart devices (simple activity measurers, smart watches, armbands etc.) influence exercise habits. Sport events, let them be leisure or professional, attract huge sums of money through sponsorship, advertising and sport tourism. This is why we need a strong event brand in case of every event. The quality of the online platform of the event is responsible for keeping and attracting consumers as well as for creating a positive approach towards the brand (Alonso-Dos-Santos et. al., 2017). It was found that the concept of health is complex and its measuring indicators are different and comprehensive. At the same time, the evaluation of health condition often happens without medical examination and laboratory results, it is measured by the subjective self-evaluation of health condition. The indices of subjective physical and mental health are suitable for showing social differences within a society (Ács et al., 2020c). The importance of our study was confirmed by the

research which analysed the changes consequent to the first COVID-19 wave in Hungary. National economies face growing challenges in preventing epidemics, financing their cures, as well as compensating the economic and production losses. Physical inactivity shows proven close relationship with the risk of the appearance of certain epidemics, as a consequence, physical inactivity poses direct and indirect burden to society (Ács et al., 2020a). The quick development of IoT systems made possible the appearance of compact electronic and IT devices which one can carry on his/her body. These are called smart wearable products, wearable technologies or wearable devices. Their appearance facilitated the access to information anywhere and anytime (Juhász et al., 2021). In the research of (Bartha et al., 2021), the students of BME have already been surveyed and a highlighted question was the role of smart phones, the awareness of sport-related applications and their use. The COVID-19 situation induced a repeated research. The appearance of sport applications and gamification brought a lot of sports closer to online space. The number of fitness and health development applications is almost countless. The most well-known applications store data, information and tasks of more sports. Free and simpler versions dispose of millions of downloads basis. Further surveys were required in tertiary education as COVID-19 pandemic transformed university sport activity. In addition to questionnaire research we conducted empirical surveys at partner universities, sport ser-

vice providers and sport federations.

### **Objective**

The goal of our research was to find out whether it is possible to solve leisure sport exercise of university students during the pandemic and if online platform is suitable for encouraging and measuring the efficiency of sport activities. Online sport and online recreation sport reaches wider social classes in today's information society. To support the research, we analysed successful online examples as well, such as online BeActive Night, online running competitions, 1st Open EU Inclusive I-Karate Global European Championship. Another favoured way of doing online exercise for young people is e-sport games (soccer, basketball, Formula 1, strategic games). The success of the enumerated online recreation events confirm the importance of our objective. The aim of the university sport management in the pandemic is to propagate individual and home exercise as well as virtual community building.

### **Hypotheses**

- H1. We assumed that linking sport life and online space is unknown to young adults.
- H2. We assumed that online space does not support student sport life and the continuation of healthy lifestyle, so student sport life changes in a negative way.
- H3. We assumed that participant numbers and performances will decrease in the COVID-19 period regarding a running event.



### Materials and methods

In our study we used a mixed type of research. The point of the research was to use more than one method to get our results. In the present case we combined qualitative and quantitative methods. We chose interviewing from the qualitative research methods. The questionnaire research is a written, concise and generalised survey, which is obviously the most popular quantitative method. The questionnaire survey contained five questions, which we created quickly and free of charge using Google Forms. We tried to assess what level of sport activities students do beside their university studies, what knowledge they have about online platforms supporting sport and if they use them.

319 people answered the questions. 88% of the poll participants (281 people) did leisure sport, 7% (22 people) declared themselves professional athletes and 5% (16 people) belonged to other category. The questions were processed using the popular software Statistical Package for the Social Sciences (SPSS) and Microsoft Excel. Furthermore, we carried out empirical, in-depth interviews based on Earl Babbie's interview techniques with 12 PE teachers, 12 university students and an Olympic long-distance runner. During the interviews we performed empiric research with primary and secondary data. The problem assumption was ensuring sports services in online space. During the interview with the managers - personal meeting -the examination and analysis resulted in drawing the consequences. The method of gathering data

closely connected to the main question: is it possible to provide quality sports service in online space? We organised a large-scale online running series. There was a comparing analysis about the competition series, where the results were achieved based on personal activity and performance. We used Microsoft Excel software in this case as well. Analysing the results of the questionnaire and the empiric surveys, we found successful and less successful sports services. The analysis of the change in covered distance followed. According to statistical methods we used the two-tailed t-test, Cramer-V, Pearson's chi-square ( $\chi^2$ ) method and cluster analysis. Significance level was set to  $p < 0.05$ .

### Results

The examined student database was chosen from university students and young adults doing sport at BME Sport Centre and Sport Complex and other university centres as well - Pécs, Szeged, Debrecen, Győr - using online questionnaire. 213 men and 107 women filled in the questionnaire (n=320). The majority of the respondents were aged between 18 and 25 (n=239), but there were also younger than 18 (n=3), from the 25-40 age group (n=68) and above 40 as well (n=10).

The next question of the survey examined the form of the respondents' sport activity. We were curious to find out how many competition athletes (amateur or professional) and how many leisure sport athletes answered our questions. The vast majority of the respondents – as expected – are leisure sport athletes (n=281), so



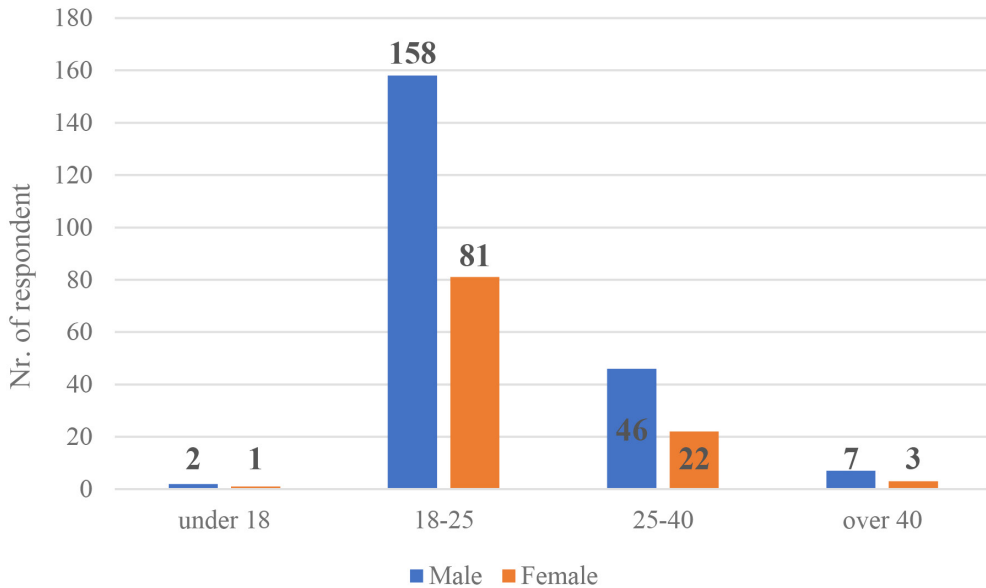


Figure 1. Sample by age and gender

Source: Authors' edition

1. ábra A minta életkor és nemek szerint

Forrás: saját szerkesztés

world and have a practical approach. After these questions we were looking forward to finding out who the athletes are, who use these applications. The majority of the respondents use them ( $n=171$ ), but there is a very high number ( $n=143$ ) who do not use applications while doing sports. The crosstab examined the relationship between the variables of the questionnaire. In the case of gender and age, gender and sport activity type, gender and awareness of sports applications of the respondents, the two variables are independent from each other and refer to the independence of the associating indices. In the above-mentioned cases we overlook the exposition of the associative measurement numbers and p-values

$V=0.555$ ;  $p=0.000$ ).

We examined five Quick clusters (Table 1) among which the group with the biggest headcount (183 people) has the following characteristics: gender-male, they belong to the age group 18-25, do leisure sports, are familiar with sports applications and use them (column 2).

The next group approaches the first, the members are males, young (under 18), do leisure sports, know sports applications and use them, but it has only one member. The third cluster is partly similar to the first two groups, as they are males, are aged between 18 and 25, are professional athletes, are familiar with sports applications, but they do not use them (35 people). The members of the second

Table 1. Results of cluster analysis  
1. táblázat A klaszteranalízis eredményei

	Clusters				
	2	5	3	1	4
<b>Gender</b>	2	2	2	2	1
<b>Age</b>	2	1	2	2	2
<b>What kind of sport activity do you do</b>	1	1	2	1	1
<b>Do you know any sport related smart phone applications</b>	1	1	1	2	2
<b>Do you use any sport related smart phone applications</b>	1	1	2	2	2
<b>Headcount</b>	183	1	35	67	33

Source: Authors' edition.

Forrás: saját szerkesztés

biggest cluster (67 people) are males, do leisure sports, do not know and do not use sports applications. The only female cluster contains 33 people, who are between 18 and 25 years old, do leisure sports, do not know and therefore do not use sports applications.

Of the comparing analysis about the running competition series: The two running events were announced with a three-week difference to a closed group-in form of invitational compe-

tion with 912 participants. 447 men and 203 women, altogether 650 people (71.2%) registered to the first event. 316 men and 189 women, a total of 505 people (55.8%) signed up for the second event. The number of registered participants exceeds separately and in one the headcount of people taking part earlier in the virus-free periods in university running competitions (Múmaraton 1 - BME running race: signed up: 227; starters: 107; completed: 101; and Múmaraton

2 - BME running race: signed up: 19; starters: 19; completed: 19). The majority of the online platforms used were worldwide acknowledged, popular applications: Strava, Adidas, Endomondo, Nike+ Run Club. The results of the race were accepted by completing at least five km, registering and sending them in. The average running performance in the first race was 5.62 km (deviation: 1.52 km), whereas in the second race it was 5.83 km (deviation: 3.57 km). The running performance in the two events did not vary significantly.

The analysis of in-depth interviews resulted in three different sets. The twelve P.E. teachers who work in tertiary education considered the immediate solving of the current difficult situation extremely important and necessary with the help of online space, in spite of the fact that they had minimal experience. The student group knows online world and video games well, but they rarely used it to support sport activities or didn't use it at all. The Olympian long-distance runner and professional athlete was familiar with and continuously used the possibilities given by online space.

### **Discussion and conclusions**

Analysing and debating the results, we can state that the age group 18-25 is active, does a lot of sport and partly uses the digital platforms related to sport. According to our consequences, everyday physical education in secondary schools has a great effect on these results. It is a surprising result that the examined performance athletes did not use sport

applications despite the fact that the development of almost every single sport, performance enhancement proceed towards IT and digitalization. Comparing willingness to do sport and activity with the research of Ács et al. (2020d) we can state that the age group 18-25 likes doing sport and exercise, but a lot of them feel that their mental health was considerably worse than their physical health condition. Both studies pointed out that the ICT technology gained in value during the pandemic. In our research we wanted to find out whether today's youngsters, young adults who partially grew up in the online world, are familiar with online platforms related to sports, doing exercise and healthy lifestyle. We were curious what effects can online exercise have on their former way of doing sports and to what extent would this type of sport keep university students back in headcount or performance. The questionnaire resulted in several new statements. Obviously youngsters and young adults closely relate to online space, but the connection between sport applications, world of sports and online platforms is not straightforward. The indices of the survey show that there are clusters which formed a close connection on online platforms. Those athletes who know and use sports applications are present in large numbers. It is an interesting observation that ladies follow less the online direction of sports. A further finding is that both the questionnaire and the empiric research confirmed the need for exercise, PE and maintaining competitions in the COVID-19 period. The change in

personal freedom had a huge impact on students and their exercise habits. Athlete participation in running competitions confirmed the observation that the lack of competing cannot be maintained for a long time. The positive feedback received from students reinforced the statement that online competition has its legitimacy and provided a lot of facilitations from the organiser side. We established that there were insignificant differences in the running performances of the two events. Our research examined an area we would have never thought about before. The defence against coronavirus, the disruption of attendance employment and education resulted in the introduction of digital work schedule. This way of education affected the world of sports and PE.

As long as earlier digital sport was represented by different forms of E-sport, nowadays almost every sport is strongly digitalized. Sports organisers were forced to look for online possibilities, in which athletes could perform keeping distance from each other, mainly outdoors in such a way that their performances could be registered based on the same parameters. Our survey highlighted that online platform also supports doing exercise, organising sport events, moreover, registering the performances and presenting them in social media motivates a part of the athletes.

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## CONSUMPTION RELATED ECONOMIC IMPACT OF 2019 ICF WORLD KAYAK-CANOE SPEED CHAMPIONSHIPS

### A 2019. ÉVI ICF GYORSASÁGI KAJAK-KENU VILÁGBAJNOKSÁG FOGYASZTÁSBÓL EREDŐ GAZDASÁGI HATÁSAI

#### Abstract

**Objective:** The primary objective of our study was to explore and quantify the macroeconomic effects of the ICF World Kayak-Canoe Speed Championships hosted in Szeged in 2019 and to present the consumption and touristic characteristics of the most important groups related to the event (domestic and foreign spectators and participants).

**Materials and methods:** The opinions and spending habits of the spectators, athletes and participants attending the World Championships were examined with a self-edited questionnaire (n=757). Expenses related to the competition, travel, spending and other touristic habits are presented using ratios and means, correlations and differences between the obtained characteristics using T-test, ANOVA test and Chi-square tests, while the macroeconomic effects of the WC were quantified using the input-output modelling. For the complex analysis of the economic impact of the Championships, we used the data of the Central

Statistical Office (HCSO) as a secondary data source.

**Results:** The number of guest nights related to the five-day competition was 33,107, which is an extremely high 7.54% ratio of the annual total number of 439,050 guest nights in Szeged in 2019. The average daily expenditure of foreign spectators was 40,035 HUF, which amount is significantly higher than the average spending of general domestic tourists and the tourists arriving especially at sports events, and they also spent more time in Hungary (4.66 guest nights) than general foreign tourists or foreign sports tourists in Hungary. The average daily expenditure of domestic spectators was 14,745 HUF, which amount is also significantly higher than the average daily spending by the average Hungarian tourists on multi-day trips and the average spending on cultural and sports events in Hungary in 2019 (HCSO, 2019). The WC created 962 million HUF GDP contribution, 814 million HUF tax revenues while 2.489 billion HUF total



national output is connected to the competition.

**Conclusions:** The World Championships had a great effect on the tourist consumption of the region and created a significant GDP contribution to the national economy. Using special indicators specialized for a certain type of event, it is generally possible to estimate the economic impact of a given sporting event for the host country.

**Keywords:** sports tourism, sports consumption, international sports events, economic impact

#### Absztrakt

**Célkitűzés:** Kutatásunk fókuszában a 2019-ben Szegeden megrendezett ICF Kajak-Kenu Gyorsasági Világbajnokság makrogazdasági hatásainak számszerűsítése, nemzetgazdasági és turisztikai jellemzőinek bemutatása áll.

**Anyag és módszerek:** Az elsődleges adatgyűjtés a világbajnokság helyszínén, a sportesemény résztvevőit, valamint a külföldi és hazai nézőit célozta, akiket kérdezőbiztosok segítségével kérdőív formában kérdeztünk meg (n=757). A kapott információkat leíró statisztikai módszerek segítségével összegeztük. A sporteseményhez kapcsolódó kiadásokat, az utazási, a fogyasztási és az egyéb turisztikai szokásokat viszonyszámok és középértékek, a kapott jellemzők közötti összefüggéseket és különbségeket T-próba, ANOVA-teszt és Khi-négyzet próbák felhasználásával mutatjuk be, míg a sportrendezvény makrogazdasági hatásainak számszerűsítését input-output modellezés segítségével végeztük. A spor-

tesemény gazdasági hatásainak komplex elemzéséhez másodlagos adatforrásként a Központi Statisztikai Hivatal (KSH) adatait használtuk.

**Eredmények:** Az ötnapos sportrendezvényhez 33 107 vendégéjszaka kapcsolódott, ami a 2019. évi szegedi összesített 439 050 vendégéjszakához képest rendkívül magas arány, az éves érték 7,54%-át teszi ki. A beutazó passzív sportturisták 4,66 napos átlagos tartózkodással és 40 035 forintos napi átlagköltséssel jellemezhetők, melyek jelentősen meghaladják az átlagos külföldi turisták tartózkodási idejét és napi költési hajlandóságukat. A hazai nézők átlagos napi költése 14 745 forint volt, amely meghaladja a belföldi turizmusban résztvevők napi átlag kiadását (KSH, 2019). A világbajnokság 962 millió forint GDP-hozzájárulást, 814 millió forint adóbevételt generált, míg az eseményhez kapcsolódóan 2,489 milliárd forint teljes kibocsátás keletkezett a magyar gazdaságban.

**Következtetések:** A hosszabb tartózkodással és magasabb fizetési hajlandósággal jellemezhető külföldi passzív sportturisták hazánkba vonzása számottevő bevételt generálhat, hozzájárulva a régió turisztikai fogyasztásához. A konkrét eseménytípusra specializált, fajlagos mutatószámok segítségével általánosságban megbecsülhető, hogy egy adott sportesemény milyen gazdasági hatást eredményez a fogadó ország számára.

**Kulcsszavak:** sportturizmus, sportfogyasztás, nemzetközi sportesemények, gazdasági hatás

### Introduction

Hungary is considered to be a sports nation with a significant tradition and ongoing success. The most important element of the concept of 'sports nation' is that the Hungarian athletes are extremely successful in the present and have been in the international competitions for the last 120 years. In this connection, it should be emphasized that in the history of Hungary in the 20th and 21st centuries, competitive sports and, most of all, its international success have been the focus. There were several periods when both politics and sports considered it important to organize international sports events in Hungary (Szilágyi 2015, Elbert 2015).

In Hungary, sport has been a strategically important sector since 2010. An important element of the development program of the sector was the development of Budapest into an internationally recognized sports city, making it to be able for the tender for hosting the Summer Olympic Games in the future. In order to achieve these goals, an increasing number of international sporting events have been applied for and hosted in Hungary, most of which have been financially supported by the Hungarian Government. As a result of the efforts, the number of international sports events hosted between 2017-2019 was more than 100 annually. In addition to the increase in the number of sport events, it can be seen that the country has won the opportunity to host competitions of increasing professional and economic prestige. Significant events include the FINA Water World Championships in

2017, the LEN Water Polo World Championships in 2020, the Men's Handball World Championships in 2022 or the IAAF Athletics World Championships in 2023. In 2019, five 'major events' were hosted in Hungary, four of which took place in Budapest (FIE Fencing, ITTF Individual Table Tennis, the World Championships of Pentathlon and Laser Run, and World Urban Games) and one in Szeged (ICF Canoe Sprint World Championships). In 2019 a sporting event has been hosted every day in Budapest as part of the European Capital of Sport program series and Budapest became one of the three most important cities in the world in terms of organizing sports events after Tokyo and Paris (Sportcal, 2020).

In parallel with the increase in the number of international sports events organized in Hungary, the theoretical and applied topics related to sports events have become the focus of Hungarian sports, social and economic studies. The updated theoretical framework of the possible effects of sporting events in Hungary was based on the work of Stocker and Szabó (2017). Their SPSETE model defines and – in the interests of state governance – prioritizes the impact groups (sport-professional, sportpolitical, social, economic, technological and environmental impacts) (Stocker and Szabó, 2017). Most of the studies related to international competitions hosted in Hungary focused on the analysis of the economic effects of sporting events. A significant part of the economic analysis examined the macroeconomic effects of the events (Bács and Szilágyi 2010; András and Máté,

2017). Within macroeconomic-focused researches, analyses with input-output logic were significant focusing on the multiplier effect (KPMG 2015; Stocker et al., 2019; Laczkó and Stocker, 2020; Laczkó et al., 2020; Laczkó and Bátor, 2020a). Several Hungarian analyses have been made on the possible methods and limitations of macroeconomic analyses (Vörös, 2017; Stocker and Boda, 2018; Vörös and Kovács, 2019). Among the economic consequences of the international sports events hosted in Hungary, the impact on tourism (KPMG, 2015; MSZÉSZ, 2016; Czeglédi et al., 2018; Molnár and Remenyik, 2019) and the spending of the participants were examined in the largest number (Laczkó and Stocker, 2020a; Stocker and Laczkó, 2020; Laczkó and Stocker, 2020b; Laczkó and Bátor, 2020b). The study of the economic and urban development effects of sport events at the local level began in the last decade (Kundi, 2012; András and Máté, 2017; Czeglédi et al., 2018). Several Hungarian research groups have focused their analyses on the social impact of sport events. The most frequently examined question is the relationship of the population of the city with the event (Máté, 2019, Polcsik and Perényi, 2020), and the social and individual effects of volunteer work (Laczkó and Paár, 2018; Bácsné et al., 2018; Perényi, 2018). Moreover, the researched effects of the sport events included the health value of the sports activities of the participants and spectators, the growth of the city's image or the strengthening of intangible values such as community awareness or

local patriotism (Stocker, 2013; Paár and Laczkó, 2018).

The trend of increasing the number and importance of sport events in Hungary regressed due to the COVID-19 pandemic. In 2020, over 100 international sport events were cancelled in Hungary, resulting in a significant decline in almost all areas of the Hungarian sports sector (Szabó, 2020; Szabó et al., 2020).

Hungary was the most successful nation among the most successful nations in the history of the Canoe Sprint World Championships of recent years. The social role of paddling and the related organizations is of paramount importance in Hungarian sports. The most successful Hungarian sport of the Olympic Games in the last 2 decades was kayaking and canoeing (with 14 gold medals at the last 5 Summer Olympic Games). The Hungarian Canoe Federation also coordinates the developments of water tourism and programs of the Active Hungary National Tourism Development Strategy. The main goal of this program is to encourage the Hungarian population to participate in water sports. Between 2014-2021, 112 water touristic centres and stations were established on the nearly 4,000-kilometer section of the rivers by the Federation ([evezzitthon.hu](http://evezzitthon.hu)).

Szeged is a very important player in canoe sprint internationally. Between 1998 and 2019, the city hosted the Canoe Sprint World Championships four times. The venue of the competitions, Szeged's water 'stadium', also called 'Szeged Olympic Centre', was opened at the western edge of the town, in 'Maty-ér',

the bed of a former rivulet and a nature conservation area (Győri, 2013). Athletes and professionals consider Maty-ér among the best tracks in the world where other international sprint championships have been held recently. During this period, 11 European Championships, World Cups and World Championships were hosted here. In addition to the events of the canoe track, the city and the Olympic Centre also hosted the Dragon Boat World Championships 3 times.

Szeged is a regional economic and cultural centre with a population of 160,000, which is one of the 10 most visited tourist destinations in Hungary (KSH 2021). The city is most often visited for its cultural attractions and events, health and thermal tourism and shopping facilities, where guests spent more than 440,000 nights in Szeged in 2019. Szeged's excellent potential for green, spa and conference tourism could make it attractive for touristic investments (Pál and Győri, 2005). The city is also making significant efforts to boost various forms of sports tourism therefore Szeged has been permanently included in the world ranking of cities hosting international sports events (ranked 216th in 2019) (Sportcal 2020).

### **Objectives**

The primary objective of our study was to explore and quantify the direct macroeconomic impact and the spill-over effects of the ICF Canoe Sprint World Championships hosted in Szeged in 2019. In order to present the effects at the level of the Hungarian economy and

budget, in addition to the costs related to the event, we also had to get to know the touristic spending habits of the different types of participants.

### **Hypotheses**

H1: Related to the ICF Canoe Sprint World Championships the average daily expenditure of foreign spectators is higher than the average spending of general domestic tourists.

H2: The tourists arriving especially for the sports events spend more time in Hungary than general foreign tourists or foreign sports tourists in Hungary.

H3: The average daily expenditure of domestic spectators is higher than the average daily expenditure of the average Hungarian tourists on multi-day trips as well as the average spending on cultural and sports events in Hungary

H4: The average daily expenditure is high compared to the benchmark competitions.

### **Materials and methods**

The information used for economic modelling and to present the spending habits of the groups of participants comes from primary and secondary sources. The opinions and spending habits of the spectators, athletes and participants attending the World Championships were examined in a sample group of  $n=757$  people with a self-edited questionnaire. The World Championships was attended by 1,771 competitors and professionals from 102 countries. The  $N=11,134$  spectators of the competition (11.7% came from abroad) watched a total of more

than 26,000 competition days. 5.9% of participants were included in the research sample using a simple convenience sampling method. The data collection took place at the Championships venue. We also used the budget data of the event and the information of the organizers to estimate the macroeconomic effects.

The information obtained by questionnaire data is summarized and presented using descriptive statistical methods. Expenses related to the competition, travel, spending and other touristic habits are presented using ratios and means, correlations and differences between the obtained characteristics using T-test, ANOVA test and Chi-square tests (Ács, 2014). The direct economic impact and the spill-over effects of the World Championships were quantified using the input-output modelling method. Input-output modelling has been available for decades to analyse the macroeconomic effects of sport events in the international literature (Burgan, Mules 1992; Daniels, 2004; SportsEconAustria et al, 2012). The method based on the symmetric input-output tables (henceforth: IO) of sectoral accounting has been used more and more often in Hungary in the last decade to study the impact mechanisms of hosting international sporting events (KPMG 2015; Laczkó and Stocker, 2018; Stocker et al., 2018; Laczkó and Bátor 2020; Laczkó et al., 2021). IO modelling also appeared in estimating the macroeconomic effects generated by the spending of consumer groups related to sporting events (e.g. foreign viewers, domestic viewers) (Laczkó and Bánhidi, 2018;

Laczkó and Bátor, 2020; Stocker, Laczkó 2020; Laczkó and Stocker, 2020).

Several limitations and difficulties of IO modelling, which also takes into account multiplicative effects, have been formulated in economics (2006; Kundi, 2012; Vörös, 2017, Vörös and Kovács, 2020). For events in individual sports such as canoeing, the demand associated with the world event rarely exceeds significantly the supply and economic capacity constraints, so deficiencies in input-output modelling are less of a problem in estimating the impacts on national economy. In our opinion, the limitations of unilateral interpretations of increased income leakage and demand growth, as well as the negative consequences of crowding-out and substitution effects, are less visible in this type of event. In the case of domestic and foreign viewers, we attempted to estimate the magnitude of the ‘substitution effect’ and the ‘new expenditures appearing in the Hungarian economy’.

To estimate the macroeconomic impact of the World Championships, we took into account the costs of organization, the total consumption of all the participants (such as athletes, professionals, directors, domestic and foreign spectators) and the sponsors’ expenses.

As a first step in the input-output modelling, we quantified the direct economic effects of the World Championships, which were estimated using the results of a questionnaire survey and information from a secondary source. The direct economic effects included those expenditures that appeared in the Hungarian

economy and would not have materialized without the event. Here we took into account the total amount of spending of the organizers related to the event, the total Hungarian expenses of the accredited participants of the event, domestic and foreign spectators, and the sponsorship expenses. In quantifying the direct macroeconomic impact in net terms, we had to take into account several correction factors, which were the following:

- In the case of domestic spectators, we examined the extent of the substitution effect, based on which it can be said that on average less than a quarter (23.5%) would have been spent by domestic spectators in the given period if they had performed other activities instead of WC visits (e.g., stay at home, etc.). In the analysis, only the 76.5% extra expenditure generated by the World Championships visit was taken into account.
- In the case of foreign viewers, we examined the main motivation and type of their trip. In the impact analysis, we only considered the spending of those whose primary travel purpose and motivation was to visit the World Championships. 97.0% of the foreign spectators of the event can be considered as passive sports tourists.
- The amounts paid for the entry tickets appeared in both the spectators' expenditure and the organizers' budgets, they were only taken into account for the budget of organizers to avoid duplication.

- The travel costs of foreign participants and spectators were excluded from the impact analysis, because these items typically did not appear in the Hungarian economy.
- To avoid duplication, we did not calculate the financial contribution from the sponsorship activity related to the World Championships. Sponsorship with services, products, or assets transferred were included in the research. For sponsorship activity, we also included the own costs of sponsorship, exhibitors and other companies appearing in competition. The extent of these were quantified by the basic of expert estimates received from sponsors and organizers.

Table 1. shows the extent and proportion of the contribution of the considered groups to the direct economic impacts of the event.

In the second stage of the modelling, we determined the magnitude of the direct economic effect of domestic output, which was obtained by quantifying and deducting the import content of the cost and expenditure items recorded at the direct economic effect related to the World Championships. For the determination of the import content and for the further steps of the modelling, we used the results of the IO tables estimated for 2015 on the basis of the data of the Central Statistical Office.

The cost and expenditure items related to the World Championships were classified into sectors based on the structure



Table 1. The direct economic impact of the ICF Kayak-Canoe World Speed Championships (in thousands HUF)

1. táblázat: Az ICF Kajak-Kenu Gyorsasági Világbajnokság közvetlen gazdasági hatása (E Ft-ban)

Expenditure	Organisers	Sponsors	Domestic	Foreign	Participants' extra	Total
Value (Th HUF)	1 047 715	32 020	149 089	101 652	160 154	1 490 631
Proportion (%)	70,3%	2,1%	10,0%	6,8%	10,7%	100,0%

Source: Authors' editing

Forrás: saját szerkesztés

of sectoral accounting. In the following, we determined the multiplier effect of the final output of the sectors concerned, the content of added value generated by the increase in unit final consumption, the tax rate, and the amount of GDP generated by the increase in unit final consumption in the given sector. The economic effects of Championships were detected in the following sectors of the NACE nomenclature:

- Sports, entertainment and leisure activities;
- Accommodation; restaurants;
- Land and pipeline transport;
- Food, drink and tobacco;
- Light industry;
- Manufacturing industry;

As a further step of the modelling, we quantified the magnitude of the total domestic output generated by the event and the content of the generated value added, taking into account the multiplier effects.

In addition, we determined the revenue from taxes in connection with the World Championships. As a final step, we quantified the extent to which expenditures contributed to Hungary's GDP.

### Results

As a first step in assessing the macroeconomic effects of the World Championships, we would like to present the consumption and touristic characteristics of the most important groups related to the event (domestic and foreign spectators and participants). Then, we quantify the macroeconomic effects generated by the competition, based on the consumption of the presented groups and the expenditures of the organizers and sponsors.

### Consumption and touristic characteristics of the World Championships

#### *Domestic spectators*

The World Championships was visited



personally by 9,825 domestic spectators who watched a total of 21,025 competition days. We examined the characteristics, the opinions related to the event and the spending habits of the domestic spectators of the Kayak-Canoe World Championships.

A total of 54% of the sample was male. In terms of age distribution 16,7% were at the age of 20 or under 20 years of age, 25,6% were 21-30 years of age, 17,2% were 31-40 years of age, 19% were 41-50 years of age, 11,9% were 51-60 years of age and 9,5% were over 60 years.

A total of 27,5% of the respondents travelled from up to 0,5 hour (22,5% came from Szeged) to the competition. Further 11,6% travelled for up to 1 hour and a 29,3% travelled up to two hours to watch the competition (a total of 68,5% of the spectators travelled up to two hours). 31,5% of the domestic spectators came from a distance of more than 2 hours (15,3 % 2,1-3 hours, 16,2% over 3 hours). Domestic spectators came to the World Championships from all counties of the country.

According to modes of travel 76,2% of the spectators travelled by car (or mini-bus), 13,9% by public transport and by the provided transfer (this was true of the people of Szeged), 4,8% by train/coach, and 5,2% used other vehicles (such as bicycles, Oscar etc.).

More than a half of the respondents (55,3%) watched the competition with their families, 29,9% came with friends and acquaintances, 12,6% came with sports mates, and 7% of them came alone. The Hungarian spectators watched

an average of 2.14 (SD=1.33) competition days.

According to accommodation 38,9% of the spectators booked accommodation to see the competition and they spent an average of 3.01 (SD=1.52) nights. Considering all domestic viewers into account, they spent an average of 1.13 (SD=1.74) guest nights in and around Szeged. Most of the used accommodations were cheaper ones, such as sleeping with friends or lower rated commercial accommodations and hired apartments. Only 15,0% of the domestic spectators slept in 3-stars or higher rated hotels (5,2% in 4-or 5-stars hotels and 9,9% in 3-stars hotels), while 38,5% of them stayed at hired apartments (Airbnb), and 23,9% of them slept by friends and acquaintances.

Domestic spectators spent an average of 14,475 HUF (SD=8,875) per day of the competition and the expenditure distribution can be seen in Figure 1.

Domestic spectators rated the entertainment value of the competition as outstandingly good, as three-quarters of the respondents (75,7%) rated the World Championships as five on a scale of 1 to 5. The mean of the ratings was 4.72 (SD=0.53). Only 3,6% of respondents rated the entertainment value of the competition as two or three (no one rated the competition as the worst value).

More than a third of the spectators (34,8%) were curious and spent time visiting the tourist attractions over the World Championships venue. The most popular places were in order: Dóm square with the city center (Kárász utca) 53%, Sze-

ged and other sights of the settlements of the region (zoo, Ópusztaszer, Makó, etc.) 16.6%, baths and spas (Aquapolis, Mórahalom, etc.) 12.3%, Árkád shopping mall 8.6%, nightclubs 5.9%.

### *Foreign spectators*

According to the organizers data, the foreign spectators (1,309 people) coming to Szeged for the ICF Kayak-Canoe World Speed Championships watched a total of 5,694 competition days. In the sample the total of 58% of foreign spectators were male, and the most represented group in terms of age were 21-30 years old (43.4%) and 31-40 years old (21.4%). The sample included citizens of 21 countries. 9.1% of respondents came from Australia and

New Zealand, 1.1% from Canada, while the vast majority came from European countries (89.8%). More than half of the foreign spectators (46.1%) travelled by their own car (or minibus), in addition to which a considerable number of them also arrived in Hungary by plane (42%). The other means of transport were hardly mentioned at all in connection with the venue to the WC and to Hungary. The foreign spectators of the World Championships spent an average of 4.66 nights in Hungary. 43.5% stayed in a hotel of at least 3 stars (26.2% in 4- and 5-star hotels), and 27.4% spent their nights in a rented apartment and 10.1% slept with acquaintances / friends. Foreign spectators spent an average of 25,221 HUF

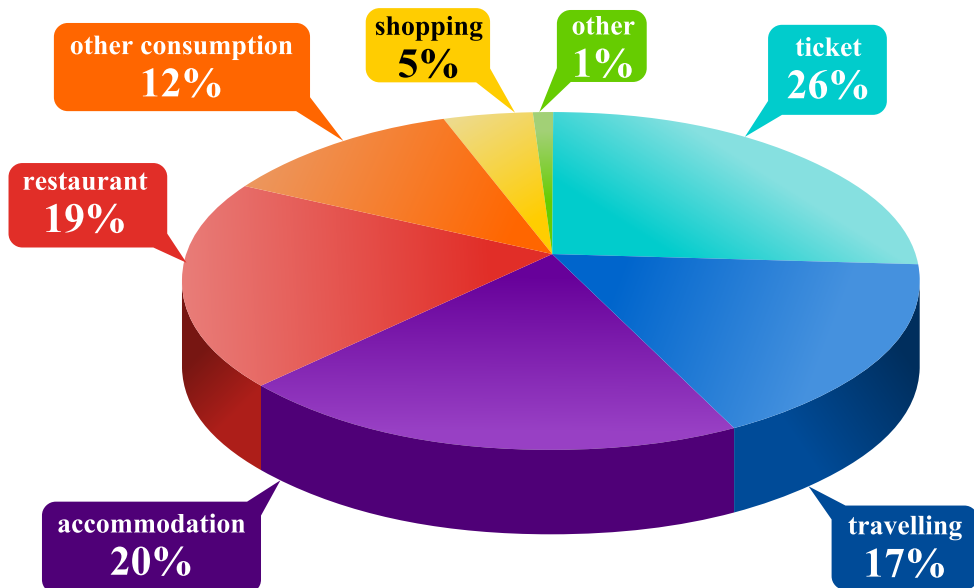


Figure 1. Distribution of spending by domestic viewers

Source: Authors' editing

1. ábra: A hazai nézők költési szerkezete

Forrás: saját szerkesztés

(SD=21,136) per day without travel in connection with the competition, while together with travel, this amount was 40,035 HUF (SD=44,965) per day, and the expenditure distribution can be seen in Figure 2.

Foreign spectators rated the quality of the World Championships as favourably, as more than two thirds (68.4%) of the respondents rated the organisation of the competition as the best possible (five). Only 2.3% of them rated as three, below which the event did not receive lower rating. On average, foreign spectators rated the World Championships as 4.66 (SD=0.52).

Examining the tourism related consump-

tion of foreign spectators, it can be said that more than two thirds (67.6%) of the respondents were curious about the tourist attractions of Szeged and its surroundings. 28.3% of foreign viewers visited several tourist attractions on several occasions in addition to the World Championships. Among the foreign spectators, the most popular places were the following: downtown Szeged with Dóm square 39.6%, sights of Budapest 20.7%, other sights of Szeged and its surroundings (with zoo, baths and surrounding settlements such as Makó) 31.5%. Based on the experience of their trip to Hungary related to the World Championships, foreigners rate the hospitality of Hungarians on average 4.5 (SD=0.55).

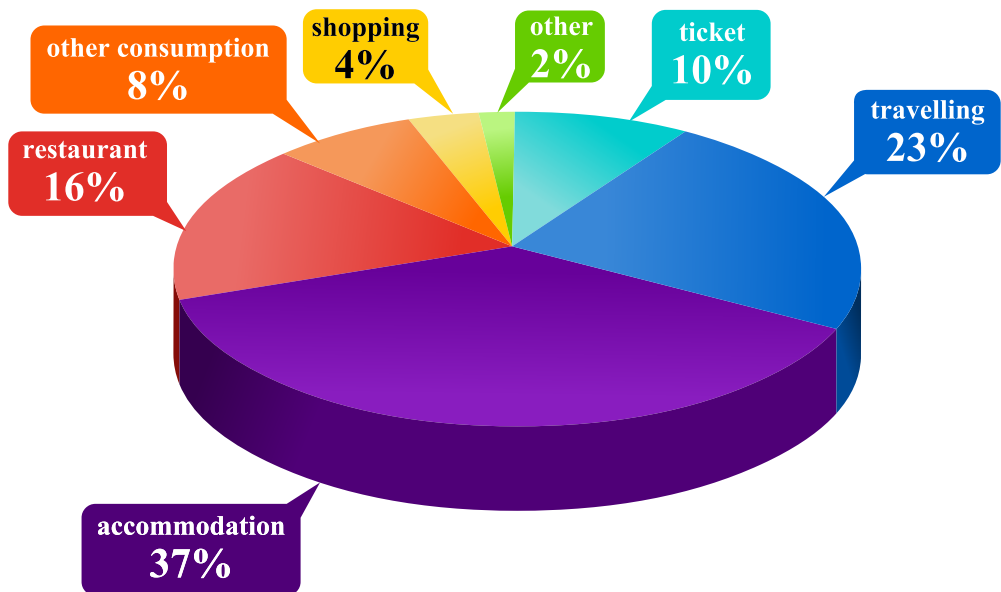


Figure 2. Distribution of spending by foreign viewers (%)

Source: Authors' edition

2. ábra: A külföldi nézők költési szerkezete

Forrás: saját szerkesztés

Based on the answers, it can be said that all foreign spectators would like to return into Hungary in the future. Almost three quarters (71.8%) of the foreign spectators of the World Championships would return to Hungary within 5 years based on their experience so far.

### Foreign participants

59.5% of the surveyed foreign participants were players, 24.3% were coaches, 2.7% were judges and 13.5% were other participants in the World Championships. 73% of the participants arrived at the event by plane, the rest by road in their own car (or minibus).

The participants spent an average of 7.04 (SD=1.7) nights in Hungary in connection with the World Championships.

The participants spent an average HUF 16,200 (SD=13,959) per day in addition

to their basic care (accommodation, travel, meals) belonging to the competition, and the structure of foreign participants' spending over primary care can be seen in Figure 3.

The quality of the organization of the event was rated extremely favourably, as average 4.8 (SD=0.46) on a scale of 1 to 5. 83.8% of them rated the organization of the World Championships as the best grade.

Slightly more than a third of the foreign participants (37.8%) had time and openness to visit the tourist attractions of Szeged and Hungary (21.6% of them were able to take time to visit the area once, while 16.2% of them was able to take time for visit the surroundings more times beside the competition schedule). The foreign participants were similarly interested in the centre of Szeged and the

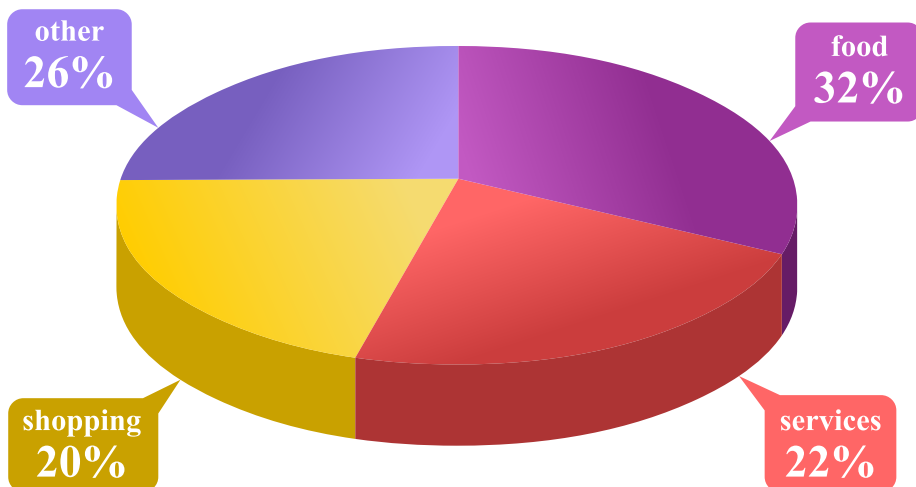


Figure 3. Structure of foreign participants' spending over primary care (%)

Source: Authors' edition

3. ábra: A külföldi résztvevők alapellátáson felüli kiadásainak szerkezete

Forrás: saját szerkesztés

Cathedral (76.9%), in addition to it they visited Budapest (7.7%) and the sights around Szeged (e.g. Makó 7.7%) in a larger proportion.

Foreign participants rate the hospitality of Hungarians on average 4.6 (SD=0.55). 89.2% of the participants think that they would return to Hungary within the next 5 years (16.2% within one year, while 73% within 5 years).

### **Economic impact analysis of the ICF Kayak-Canoe World Speed Championships**

The total direct net expenditure related to the Kayak-Canoe World Speed Championships was 1,490,630,747 HUF with an additional 334,577,879 HUF VAT revenue to the central budget. Expenditure items indicated in the direct economic impact include domestic and imported items too. Average import ratio of the segments from where the World Championships purchased products and services is 3.4%, consequently the demand side of the organisation and the other participants net expenditure had to be decreased by this volume in the economic impact analysis, as these have no direct effect on the Hungarian economy. Estimated import of the world Championships was 50,128,481 HUF, so direct national impact of the event was 1,440,502,266 HUF. The suppliers had to use indirect products and services to be able to provide products and services, so the presented segments' economic multiplier effect had to be considered. In accordance with the structure of the expenditure the weighted average mul-

tiplier became 1.728, in conclusion the 1,440,502,266 HUF net demand of the WC required 2,489,141,160 HUF output from the Hungarian supply chain, so the outcome of the World Championships is 2,489,141,160 HUF generated output in the Hungarian economy (Figure 4).

The value of the weighted average added value multiplier of the segments of the expenditure structure of the World Championships is 0.346, which means that the World Championships generated 854,316,620 HUF added value in the Hungarian economy. Input-output analysis model take also in account other taxes, which weighted average multiplier value of the relevant economic segments is 0.043, that means other taxes generated by World Championships were 107,278,798 HUF. The World Championships created a total of 961,595,418 HUF GDP contribution. The generated GDP of the World Championships involves income taxes, social security and tourism tax also paid to the central budget as a value of 128,851,201 HUF in addition 578,139,716 HUF VAT was also paid into the budget.

The amount of the gross financial subsidy was 818 M HUF, the total amount of it returned to the government budget in the form of a tax revenues.

### **Discussion and Conclusions**

Examining the tourism consumption related to the ICF Kayak-Canoe World Speed Championships, it can be said that 11,134 spectators watched 26,719 race days during the 5-day event, while the number of guest nights was 33,107,

which is an extremely high ratio, 7.54% of the annual value of the guest nights of Szeged and its area. A total of 11.7% of the spectators came from abroad, while 59.6% came from Hungary, at least an hour away. More than one-fifth (20.2%) of the spectators were local. The participants and spectators of the competition rated the quality of the organization of the event extremely favourably, on a scale of 1 to 5, to 4.74, which is a particularly high value, there was no significant difference in the ratings of domestic and foreign spectators and participants. The average daily expenditure of foreign spectators was 40,035 HUF, which amount is significantly higher than the average spending of general domestic tourists and the tourists arriving especially at sports events which value was 17,131 HUF ( $t=6.59$   $p=0.000$ ) and 18,090 HUF ( $t=6.31$ ;  $p=0.000$ ) in Hungary in 2019, therefore H1 was supported. The foreign spectators also spent more time in Hungary

(4,66 guest nights) than general foreign tourists or foreign sports tourists as well (2.26 days and 2.29 days respectively) in Hungary. The average daily expenditure of domestic spectators was 14,745 HUF, which amount is also significantly higher than the average 6,813 HUF ( $t=17.27$ ,  $p=0.000$ ) daily spending by the average Hungarian tourists on multi-day trips in Hungary in 2019 and the average spending of 8,169 HUF on cultural and sports events ( $t=8.8$ ,  $p=0.000$ ), which supports H3 hypothesis. From the average distribution of spending by domestic and foreign spectators, the rate of travel was the highest at 26.95%, followed by meals at 21.75% and accommodation at 21.25%. 67.6% of foreign spectators and 34.8% of domestic spectators were curious and spent time visiting the tourist attractions of the area, the most popular places were: Dóm square with the city center (Kárász street), Szeged and other sights of the settlements of the region (zoo, Ópusztaszer,

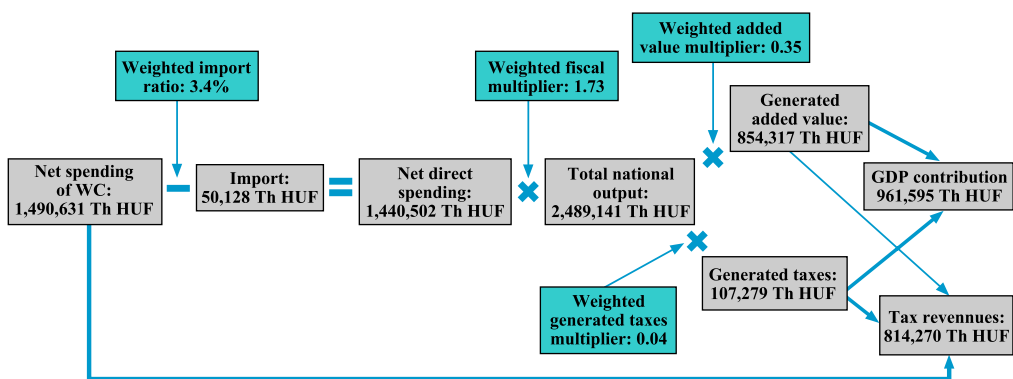


Figure 4: Economic impact of the ICF Kayak-Canoe World Speed Championships

Source: Authors' edition

4. ábra: Az ICF Kajak-Kenu Gyorsasági Világbajnokság gazdasági hatása

Forrás: saját szerkesztés

Makó, etc.), baths (Aquapolis, Mórahalom, etc.), Árkád shopping centre, entertainment venues.

The macroeconomic effects and the generated tourism consumption of the 2019 ICF Kayak-Canoe World Speed Championships were compared with the other major international sports events held in Hungary at the period of 2018-2020: Liebherr 2019 ITTF Table Tennis World Championships, the 2018 World Wrestling Championships 2020, the 10-meter European Shooting Championships (2018) and the 34th LEN European Water Polo Championships (2020). We involved in the examination mainly world championships of individual sports organized in Hungary, as their spectator attracting impact is significantly lower than spectator sports, only the 34th LEN European Water Polo Championships (2020) stands out, because water polo is a spectator sport in Hungary, which is considered as spectator sport by the government too.

In terms of the number of guest nights for spectators and competitors, the ICF Kayak-Canoe World Speed Championships performed outstandingly, with 33,107 guest nights which preceded the 34th LEN European Water Polo Championships, and is significantly more than the average of the five world competitions' 22,482 guest nights. The 34th LEN European Water Polo Championships attracted mainly people from Budapest, and due to the high proportion of local spectators, the number of guest nights was low compared to the number of the competition days of spectators and com-

petitors. At the ICF Kayak-Canoe World Speed Championships and the 10-meter European Shooting Championships, the proportionally high number of guest nights can be attributed in part to the non-capital venue. These findings support H2.

The proportion of guest nights spent by foreign spectators in a hotel of at least 3 stars at the ICF Kayak-Canoe World Speed Championships was the lowest of the examined competitions with 44%, which can be attributed to the limits of Szeged's hotel capacity, the number of guest nights related to the five-day competition was 33,107, which is an extremely high ratio, 7.54% of the annual value compared to the total number of 439,050 guest nights in Szeged in 2019. The tourist attraction was especially high at the 2019 ICF Kayak-Canoe World Speed Championships in Szeged with a rate of 68%, only the 34th LEN European Water Polo Championships had a higher proportion of the tourist attractions of the settlements hosting the competition (84%), while the lowest interest in local tourist attractions was in the spectators of the 10-meter European Shooting Championships in Győr.

H4 hypothesis of the study was also supported, the average daily expenditure of foreign spectators at the 2019 ICF Kayak-Canoe World Speed Championships was 40,035 HUF, which we compared to the average daily expenditure of foreign spectators at the other competitions, the differences were tested by one-sample T test. The reason for using the one-sample T tests is that we did not have additional



values (e.g., standard deviation) for the average costs of the other competitions. During the comparisons of the averages with the T-test, we counted the rate of inflation and adjusted all average expenditures for the 2019 base year. The result of the comparison of the P values pointed out that the only competition where foreign spectators spent significantly more on a daily average was the 34th LEN European Water Polo Championships

( $p=0.007$ ) (Table 2).

In the case of the average daily spending of domestic spectators, it can be said that the daily spending of 14,745 HUF by the domestic spectators of the 2019 ICF Kayak-Canoe World Speed Championships is a high value compared to HCSO data and the measured competitions as well. The average daily spending of domestic spectators at the Kayak-Canoe and Table Tennis World Championships

Table 2. Average daily expenditures and number of guest nights of the world championships

2. táblázat: A világbajnoksághoz kapcsolódó napi átlagos költsékek és vendégéjszakák száma

International sports event	Average daily spectator expenditure				Average number of spectator guest nights	
	Foreign (HUF)	T test (p)	Domestic (HUF)	T test (p)	Foreign (guest-night)	T test (p)
2019 ICF Kayak-Canoe World Speed Championships	40 035		14 745		4.66	
LIEBHERR 2019 ITTF World Championships	41 280	0.716	15 423	0.076	3.85	0.001
2018 World Wrestling Championships	45 925	0.201	8 978	0.001	5.40	0.001
10-meter European Shooting Championships (2018)	35 958	0.125	3 633	0.001	4.87	0.193
34th LEN European Water Polo Championships (2020)	49 762	0.007	10 376	0.001	3.84	0.001

Source: Authors' editing

Forrás: saját szerkesztés

was significantly higher than at the other three competitions (Table 3).

We examined also with one-sample T test the average number of guest nights spent by foreign spectators related to the competitions, the 2019 ICF Kayak-Canoe World Speed Championships is in the middle range with a value of 4.66, the 2018 World Wrestling Championships were significantly higher with a value of 5.4, while the Liebherr 2019 ITTF Table Tennis World Championships with a value of 3.85 and the 34th LEN European Water Polo Championships (2020) with a value of 3.84 had a significantly lower result with an equal value of  $p=0.001$ . The significantly higher value can be explained by the structure of foreign spectators, who came in a higher proportion from outside Europe, compared to other competitions, which were mainly attractive to spectators from the neighbouring countries and Western European countries. These findings also support H2 (Table 2).

Among the examined competitions the budget of the 2019 ICF Kayak-Canoe World Speed Championships was medium size. The amount of the gross financial subsidy was 818 M HUF, but 814 M HUF of it returned to the government budget within the year in the form of a tax revenues. The 2019 ICF World Kayak-Canoe Speed Championships created 962 million HUF GDP contribution while 2,489 billion HUF total national output connected to the competition. (Table 3).

Although our research was limited to explore and quantify the direct and spill-over macroeconomic effects of the ICF Canoe Sprint World Championships hosted in Szeged in 2019 and to present the consumption and touristic characteristics of the most important groups related to the event (domestic and foreign spectators and participants), there were several other sport professional successes connected to the Championships as well. The Hungarian national team finished at the third place in the medal table with 5 gold, 4 silver and 3 bronze medals. The development of the “Maty-ér” Racetrack also connected to the Championships, the improvement raised the Szeged Olympic Center one of the world’s best-performing kayak and rowing facilities, the winners arriving in front of the grandstand which increasing the media value of the Kayak-Canoe sport. The Championships took Szeged in the spotlight, which had a great effect on the tourist consumption of the region and created a total of 961,595,418 HUF GDP contribution.

Table 3: The economy impact of the international sports events

Source: Authors' editing

3. táblázat: A nemzetközi sportesemények gazdasági hatása

Forrás: saját szerkesztés

<b>International sports event (datas in M Ft)</b>	<b>Government support</b>	<b>Net direct spending</b>	<b>Total national output</b>	<b>Generated GDP</b>	<b>TAX revenues</b>
2019 ICF Kayak-Canoe World Speed Championships	818	1,491	2,489	962	814
LIEBHERR 2019 ITTF World Championships	1,274	2,303	3,785	1,541	1,295
2018 World Wrestling Championships	1,861	3,718	6,246	2,623	2,186
10-meter European Shooting Championships (2018)	103	247	402	173	122
34th LEN European Water Polo Championships (2020)	808	2,644	4,322	1,852	1,505

Source: Authors' editing

Forrás: saját szerkesztés

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## SPORTING EVENTS IN GYŐR – THE ISSUE OF SOCIAL SUPPORT

### SPORTESEMÉNYEK GYŐRBEN – A TÁRSADALMI TÁMOGATÁS KÉRDÉSE

#### Abstract

**Objective:** The relevance of our topic in 2020 was justified by the fact that in the last 5 years, following the success of EYOF 2017 (European Youth Olympic Festival), several „non mega”, i. e. smaller international sporting events have been organized in Győr. Social support for the organisation of sporting events is relevant both ex ante and ex post, therefore the aim of our study is to identify homogeneous groups of respondents based on their attitudes towards sporting events. Our research question was: What are the characteristics of different groups of urban respondents in terms of their attitudes towards sporting events?

**Hypotheses:** H1: There is a positive link between a general positive attitude regarding international sports events and sports consumption activity. H2: There is a positive link between a general negative attitude regarding international sports events and economic activity plus high-level education.

**Materials and methods:** To characterize the three groups (supportive, neutral,

sceptical) formed from the cluster analysis, we examined three distinctive sets of background factors.

The first dimension includes socio-demographic characteristics, the second category consists mainly of subjective factors, the third group consists of indicators related to sports consumption.

**Results:** In the social demographic dimension of the impact of sporting events, there is no definite relevant social group among the citizens of Győr. On the level of personal quality of life and satisfaction with the living environment, sporting events are unanimously perceived as having a positive impact on the citizens of Győr. Based on the values of the indicators related to sports consumption, we found the strongest relationship in the direction of being more physically active, being more active in sports and supporting sporting events, and even being more oriented towards deeper involvement.

**Conclusions:** The strengthening of local identity, of urban identity, appears as an almost identical factor, which can be assessed not only as a social effect but also



as a significant sports economic force.

**Keywords:** sporting event, social support, residents of organizing city, Győr

### Absztrakt

**Célkitűzés:** Témánk aktualitását 2020-ban az indokolta, hogy az EYOF (Európai Ifjúsági Olimpiai Fesztivál) sikeresége után Győr Megyei Jogú Városban az elmúlt 5 évben számos „non mega”, kisebb méretű nemzetközi sportrendezvényt került megrendezésre. A sportrendezvények szervezése kapcsán a társadalmi támogatás ex ante és ex post egyaránt releváns, ezért tanulmányunk célja, sportrendezvényekkel kapcsolatos attitűdökön alapuló homogén csoportok azonosítása a kérdőívet kitöltő válaszadókból. Kutatási kérdésünk: Milyen jellemzőkkel bírnak a válaszadó városi lakosok különböző csoportjai a sportrendezvényekhez való viszonyulásuk alapján?

**Hipotézisek:** H1: A nemzetközi sportrendezvényekhez való általános pozitív hozzáállás pozitív kapcsolatban áll sportfogyasztási aktivitással. H2: A nemzetközi sportrendezvényekhez való általános negatív hozzáállás pozitív kapcsolatban a gazdasági aktivitással és a felsőfokú végzettséggel.

**Anyag és módszer:** A klaszterelemzésből kialakult három csoport (támogató, semleges, szkeptikus) jellemzésére a háttér tényezők három különböző csoportját vizsgáltuk. Az első dimenzió a társadalmi-demográfiai jellemzők, a második kategória főként szubjektív tényezőkből áll, míg a harmadik csoportot a sportfo-

gyasztással kapcsolatos mutatók alkotják.

**Eredmények:** A sportrendezvények hatásának megítélésében a társadalmi demográfiai dimenzióban a győri polgárok esetében nem mutatkozik határozott releváns társadalmi csoport. A személyes életminőség és a lakókörnyezettel való elégedettség szintjén a sportrendezvényeknek egyöntetű pozitív hatást tulajdonítanak a győriek. A sportfogyasztással kapcsolatos mutatók értékei alapján találtuk a legerősebb kapcsolatot a fizikailag aktívabb, a sportoló és a sportrendezvényeket támogató, sőt a mélyebb bevonódásra is orientálódó elköteleződés irányában.

**Következtetések:** A helyi identitás, a városi identitás erősödése szinte azonos tényezőként jelenik meg, amely nemcsak társadalmi hatásként, hanem jelentős sportgazdasági erőként is értékelhető.

**Kulcsszavak:** sportrendezvények, társadalmi támogatás, szervező város lakosai, Győr

### Introduction

The actuality of our topic in 2020 was justified by the fact that in the last 5 years, following the success of EYOF 2017 (European Youth Olympic Festival), several „non mega”, i. e. smaller international sporting events were organized in Győr. The year 2017 was an outstanding period for international sporting events in Hungary. Based on research by Laczkó and Stocker “we can see that foreign passive sport tourists to domestic sports events related expenditures contributed 21.3 billion HUF to the GDP in 2017” (Laczkó and Stocker, 2020:29). By 2015, the city of Győr had decided to enhance its regional competitiveness by undertaking both national and international sporting events. EYOF in 2017 established an outstanding sports infrastructure in the town. Due to the organizational experience, excellent relationships have been built with sports unions. The town has gained know-how in organizing sporting events. The infrastructure, the organizational knowledge, the network of relationships, and the strength of local sports still position Győr at a high level in the organization of sports events, in the medium and long term.

The success of European Youth Olympic Festival (EYOF 2017) can be convinced by undertaking and organizing international sports events in Győr with a wide range of strategic tools (Sportkonceptió Győr 2020-2025). One pillar of the Győr sports concept is that the city of Győr keeps organizing more and more national and international sports events, making use of both the sports infrastruc-

ture and the organizational knowledge in existence since EYOF. “During the last 5 years, there have been 90 sports events held in Győr, 28 of them (31.11%) international events” (Máté et al., 2020:20). According to the concept “right event in the right city”, Győr is suitable for non-mega events. The definition of non-mega events is based on the definition of mega events. According to Maennig and Zimbalist (eds. 2012), the differences between non-mega sporting events and mega sporting events consist in the number of athletes, the number of participants, and television viewership, location, economic impact. For non-mega events, these are all smaller scale.

### Social support

International experience with mega events shows that the lack of social support has been transferred onto the attitude of non-mega events as well. During the past years, 7 cities have declined to host the Olympics (Boston, Hamburg, Krakow, Munich, Oslo, Rome, Budapest), the various NOlympics movements have grown stronger. Gaining and keeping the social support of sports events is more and more difficult because of the way people are being influenced; this often turns into a political issue. An example in Budapest: an Ipsos survey back in 2016 indicated that 58% of Hungarians would be glad, 62% even proud if Budapest were to host the Olympics in 2024 (Ipsos, 2016). Then, due to the NOlympics campaign, the public mood shifted. For the organization of sporting events, the social support, both ex-ante and ex-

post, are relevant.

It's important to state that not every sporting event needs social support. Most of these expectations are formulated mostly when significant financial resources are necessary for the purpose. In our current case, in Győr, organizing sports events is part of the urban development plan, so involving the citizens and gaining their support is essential. As for mega events, public opinion surveys measure public support way before the event, during the process of application. During the Boston Olympic competition, the change in the public opinion survey indicated: the more citizens knew about the competition, the less they liked it. In January 2015, 55% of the citizens supported the Olympic competition, 35% were against it. By March, the figures turned around (Bloomberg Citylab, 2017).

Citizens of Los Angeles really wanted the 2024 Olympic Games. According to a 2015 survey made by the organizers, 81% supported the aim to host the event in 2024 (more than twice as many Boston citizens wanted the original U.S. applicant city to host the games). The Loyola Marymount University survey in 2016 stated that 88% of the citizens of LA county hoped that LA would win the right to host the Games (US Today Sport, 2016).

In Tokyo, regarding the Games being postponed from 2020 to 2021, Japanese society is dismissive, the surveys constantly measure that the majority would accept another delay or complete cancellation. Organizers strive for social support; more than 70% of the Japanese

would have liked to cancel or postpone the Olympics. According to Kyodo News Japanese news agency, 39.2% of those interviewed would prefer to cancel the games, 32.8% of them are for yet another delay (IOC, 2021).

The examples above indicate well the instability of social support. Hosting the events produces both winners and losers (Preuss, 2006), which explains why the events are rarely accepted without resistance as a „window to chances” (Hiller, 1990:120). Research on the factors influencing the support of residents has been the subject of a significant number of international publications due to the factors described above. These were aimed at linking the perceptions and support of the residents (Table 1).

“The participation and support of local residents play a major role in the success of a sporting event and the image of the host city” (Duan et al., 2021: 13). This study found that the formation mechanism of the supportive attitude of people regarding non-mega sports events is similar to that regarding mega events where the building of the exchange relationship between people and the event is based on citizens' sensing of life quality as exchange benefit. Locals would support the event if they perceived that organizing the event would improve their quality of life.

Máté (2019) had also pointed out the relationship between life quality and supporting of sports events. She stated: the more satisfaction with life quality, the higher support of international sports events. Satisfaction with life is related

to satisfaction with the dwelling place; those satisfied with their lives are satisfied with their city (Table 2).

Ma and Kaplanidou (2016) tested the mediator effect of life quality, and found that life quality significantly influences the support of events. Consequently, heritages that improve the quality of life should be supported. Del Chiappa et al. aims to profile residents based on their perceptions and attitudes towards a motorsport event, namely the FIA World Rally Championship. The seven factors identified by the exploratory factor analysis (“positive socio-cultural impacts”, “positive economic impacts”, “support for local projects and quality of life”, “positive environmental impacts”, “negative environmental impacts”, “negative socio-cultural impacts”, “Cost-benefit balance”) have shown that residents’ perceptions and attitudes were not homogeneous. Four clusters were specifically identified: “supporters”, “neutral”, “enthusiastic but culturally and environmentally concerned” and “critics”, of which “supporters” formed the largest segment (Del Chiappa et al., 2016:44).

### **Objective**

The aim of our study is to make a scientific contribution to research on the social support for international sporting events. We intended to check if we could form homogeneous groups from the responders, based on attitudes toward sports events. If those could be formed, the main question is: What kind of social characteristics, activity structure, and

habits would describe these groups? For this purpose, a cluster analysis was performed. This methodology was already used by Máté (2019) in the residents’ sample taken connection with EYOF, and five clusters were formed: those with a positive attitude, opponents, neutrals concerned about their environment, pessimists, and really enthusiastic ones.

This survey is novel and different from the one taken in 2017 in that citizens already have great experience in terms of sports events; they can better judge how these may influence their lives, and also the possible effects, so their decision of supporting the sport, events can be much more well-founded.

### **Hypotheses**

Our hypotheses are based on the research question that arose from the objective of our study: What are the characteristics of different citizen groups according to their attitude toward international sports events? We are assuming that there is a positive link between a general positive judgment of sports events and sports consumption. We are also assuming that there is a positive link between a general negative judgment of international sports events and economic activity as well as higher education.

H1: There is a positive link between a general positive attitude toward international sports events and sports consumption activity.

H2: There is a positive link between a general negative attitude toward international sports events and economic activity as well as higher education.

Table 1. Research on the factors influencing the support of residents  
 1. táblázat: Kutatások a lakosok támogatását befolyásoló tényezőkről

Ma and Kaplanidou 2016	Taiwan
Máté 2019	EYOF, Győr, Hungary
Duan et al., 2020	Wuhan Marathon, China
Del Chiappa, G., Presenza, A., Yücelen, M. 2016	FIA world rally championship, Italy

Source: Authors' edition

Forrás: saját szerkesztés

## Materials and methods

### *Sports events in Győr*

The city of Győr has hosted “non-mega”, i. e. smaller size international sporting events in the last 5 years. Organizing 90 sports events is an outstanding achievement, both within Hungary and internationally. By the number of race days, 90 sports events in 5 years mean 274 competition days – so there was a sporting event on every 7<sup>th</sup> day. 28 sporting events (31%) out of 90 were international ones, receiving on average 630 athletes and 757 participants from 17 countries (Máté et al. 2020).

By location, the events took place in 14 different venues, in 9 sports facilities, and 5 outdoor venues (public areas). The 9 sports facilities hosted 88% of the events. 5 of them can be highlighted: Aqua Sports Center, Audi Arena Győr, Magvassy Hall, University Hall – providing the venue for 77 sporting events (82%). The complex strategy of the city regarding sporting events is indicated by

the fact that only 1 (EYOF) out of 90 examined events required an investment in infrastructure.

The analysis by event venues and sports also shows that the sports facilities created for EYOF and the sports pursued in these facilities are dominant in terms of events held.

### *Characteristics of the sample*

The questionnaire survey on which our analysis is based was conducted in May 2020. The primary goal of the online questionnaire was to explore the attitudes of Győr residents towards sports and sporting events in order to get to know the opinion of the primary stakeholders, thereby helping to establish the city's sports concept. The questionnaire included – with some modifications – groups of questions regarding the impact of sporting events on city environment, local society, and economy, which were also included in the EYOF-related surveys mentioned in the introduction. The number of cases that can be used for analysis

Table 2. Clusters of social support at EYOF 2017 in Győr  
 2. táblázat: A társadalmi támogatás klaszterei a 2017-es győri EYOF esetében

<b>Those with a positive attitude</b>	<b>Opponents</b>	<b>Neutrals fearful of their environment</b>	<b>Pessimists</b>	<b>Really enthusiastic</b>
In this group the over-representation of those with a secondary education is typical.	Here, the most active age group by economic activity is 40-49 and the 50-59 age group is overrepresented. The proportion of people with tertiary education is higher than for the total sample. According to employment status, employees are overrepresented.	Among the members of the cluster, women and members of the younger age group, aged 14-19 to 20-29, were overrepresented.	There is a higher than average representation of those with tertiary education in this group.	Women and the elderly in the age group of 60+ years are overrepresented in the group. Due to the age characteristics of the group, they are mostly inactive according to their occupational status. In this cluster, there is overrepresented by those who have played sports for more than five years as children.
They are more satisfied than average with urban services, financial situation, occupation / job and health.				They are more satisfied than average with urban services, financial situation, occupation / job and health.
Multiple weekly sports are dominant in the group. In terms of sports consumption habits, the group is overrepresented by those who often read sports news in newspapers and on the Internet, often watch sports news and sports broadcasts on TV.	In terms of sports consumption habits, there was an overrepresentation in the group of those who never read sports news in newspapers and on the Internet, never watch sports news and sports broadcasts on TV.	In terms of sports consumption habits, there was an overrepresentation in the group of those who rarely read sports news in newspapers and on the Internet, rarely watch sports news and sports broadcasts on TV.	In terms of their sports habits, those who never play sports are overrepresented. With regard to sports consumption habits, there is an overrepresentation of those who rarely watch sports broadcasts.	In terms of sports consumption habits, there was an overrepresentation in the group of those who often read sports news in newspapers and on the Internet, often watch sports news and sports broadcasts on TV.

Source: Máté, 2019

Forrás: Máté, 2019

is 1116. The theoretical sampling frame included the adult population of the city, which at the time of the survey was roughly 97,000.

Based on the specifics of the data collection, the sample cannot be considered representative on the one hand, and on the other, the examination of sports habits of respondents shows that those who are more active or more interested in sports are understandably over-represented. This, in turn, goes hand in hand with an increase in the degree of relevance, given that those more active in sports are likely to have a better-shaped view of the impact of sporting events.

*Key variables, methods of data reduction and classification*

The preparation of the analysis required the development of complex indices based on the initial variables and the classification of the respondents. To this end, to measure social support, we have developed principal components that condense opinions on the different dimensions of the impact of sporting events on the city. Based on this, we classified the respondents into homogeneous groups along their attitudes.

The examination of social support related to sports events with a simple questioning technique (general, direct questions) is unsatisfactory, the background motives cannot be explored. In order to create a more nuanced picture, we used a multidimensional attitude question block in the questionnaire, which contains statements about the effects of sporting events in the city in different areas. A five-point Likert scale expressing the degree of agreement

was used for the statements. The six dimensions examined are listed below with the number of statements associated with them (a detailed list can be found in the appendix).

1. local economy (7 statements)
2. city branding (6 statements)
3. tourism (3 statements)
4. infrastructure, urban development (6 statements)
5. local society, community integration (7 statements)
6. sports, healthy lifestyle (7 statements)

It should be noted that some of the statements had a negative content - there were four such statements in total - in those cases we used an inverse scale for quantitative analyses.

In order to attempt to typify respondents along attitudes toward sporting events, we first performed data reduction by constructing a combined attitude variable per dimension using principal component analysis. The results of the data reduction show that in the case of all six dimensions, useful principal components can be developed with high eigenvalues and compression rates. All of the input variables can be considered as valid factor-forming factors. The basic properties of the principal components are shown in Table 3.

In order to reproduce the typology presented in the introduction, we performed a K-means cluster analysis, for which we used the indicators developed from the principal component scores as classification variables. The results of the cluster analysis show that in the case of the pres-



Table 3. Basic characteristics of principal components  
 3. táblázat: A fő összetevők alapvető jellemzői

Component	KMO	Bartlett sig.	Compression
<i>local economy</i>	0.900	0.000	61.4%
<i>city marketing</i>	0.894	0.000	69.6%
<i>tourism</i>	0.551	0.000	60.8%
<i>infrastructure, urban development</i>	0.780	0.000	51.0%
<i>local society, community integration</i>	0.903	0.000	69.3%
<i>sports, healthy lifestyle</i>	0.930	0.000	73.4%

Source: Own research, 2020

Forrás: saját kutatás, 2020

ent survey, the typology presented earlier cannot be really validated, the attitudes shift in the same direction in a relatively uniform way, so the dimensions behave similarly. From the final cluster centers of a four-cluster solution (Table 4), it can be seen that we can basically talk about a linear hierarchy, no real outlier group can be identified.

The result of the cluster analysis shows that we cannot identify specific groups of respondents for which the evaluation of certain dimensions would be spectacularly different from the general pattern. In the absence of specifics, the emphasis of further analysis should be put on the positive-negative assessment of the effects of sporting events. The cluster analysis can contribute to this in such a way that using the cluster membership - by merging the 3rd and 4th clusters - we can form three

groups (supportive, neutral, sceptical). By treating socio-demographic characteristics, indicators of sports activity and interest in sport as independent variables, we can examine what the primary determinants are behind attitudes towards the effects of sporting events.

#### *Methods of explanatory analysis*

Cluster membership representing the social support of international sporting events was included as an independent variable in the explanatory models using bivariate tests. The procedure used to test the relationships between the variables was selected according to the properties of the dependent variables; a chi-square independence test was performed at low measurement levels and a one-way analysis of variance was performed at high measurement levels. Statistical tests

Table 4. Final cluster centers, four-cluster solution  
4. táblázat: Végső klaszterközpontok, négy klaszteres megoldás

Component	Cluster			
	1	2	3	4
local economy	0.8506	0.0509	-0.8755	-2.2877
city marketing	0.7503	0.1372	-0.8035	-2.6075
tourism	0.7690	0.0703	-0.7465	-2.4404
infrastructure, urban development	0.9353	-0.0657	-0.8990	-1.8308
local society, community integration	0.8698	0.0252	-0.7908	-2.5572
sports, healthy lifestyle	0.8933	-0.0494	-0.7262	-2.3911
Number of cases	372	450	236	58

Source: Own research, 2020

Forrás: saját kutatás, 2020

were carried out by using the SPSS analytic software.

### Results

To characterize the three groups formed from the cluster analysis, we examined three distinctive sets of background factors. The first dimension includes socio-demographic characteristics, the second category consists mainly of subjective factors that refers to the levels of satisfaction with one's own status and living environment, while the third group consists of indicators related to sports consumption, both active (sports habits) and passive (interest in sports and sporting events). Due to the peculiarities of the background variables, we did not try to develop a complex model, thus exam-

ined the effects of the factors one by one. Among the determinants of socio-demographic status, we examined the effects of age, education, financial situation, and place of residence on attitudes towards the effects of sports events. In general, none of these factors significantly influenced the classification of respondents into individual clusters, so socio-demographic status did not influence evaluations of the effects of sporting events in our study. Table 5. shows the distributions according to the background variables and the average values for each cluster.

During the evaluation of the living environment and urban services, we evaluated fifteen factors using four-point Likert

Table 5. Distribution across categories of socio-demographic variables  
 5. táblázat: A társadalmi-demográfiai változók kategóriái közötti megoszlás

	Sceptical	Neutral	Supportive	Overall	p-value	Relation
<b>Age</b>						
Age (mean)	41.0	41.7	41.8	41.5	0.732 (ANOVA)	none
<b>Education</b>						
primary	4.4%	5.8%	5.1%	5.2%	0.409 (chi-square)	none
secondary	35.0%	38.2%	41.5%	38.5%		
tertiary	60.5%	56.0%	53.4%	56.3%		
<b>Financial status of household</b>						
without problems	36.6%	36.1%	37.1%	36.7%	0.777 (chi-square)	none
good	48.3%	48.9%	50.1%	49.1%		
below average	12.3%	13.2%	11.4%	12.4%		
financial problems	2.7%	1.8%	1.1%	1.8%		
<b>Place of residence</b>						
downtown	5.3%	8.2%	8.4%	7.5%	0.529 (chi-square)	none
inner residential	27.9%	20.9%	22.7%	23.4%		
housing estate	21.7%	22.3%	18.8%	21.0%		
outer residential	22.5%	25.3%	25.6%	24.7%		
suburb	22.5%	25.3%	25.6%	24.7%		

Source: Own research, 2020

Forrás: saját kutatás, 2020

scales representing the degree of satisfaction. In our study, we combined each factor into three categories - infrastructure and environment, services, leisure - based on the following:

*infrastructure and environment:* public safety, public sanitation, environmental condition, condition of roads, parking facilities, public transport

*services:* shopping, health care, educational institutions, crèches and kindergartens

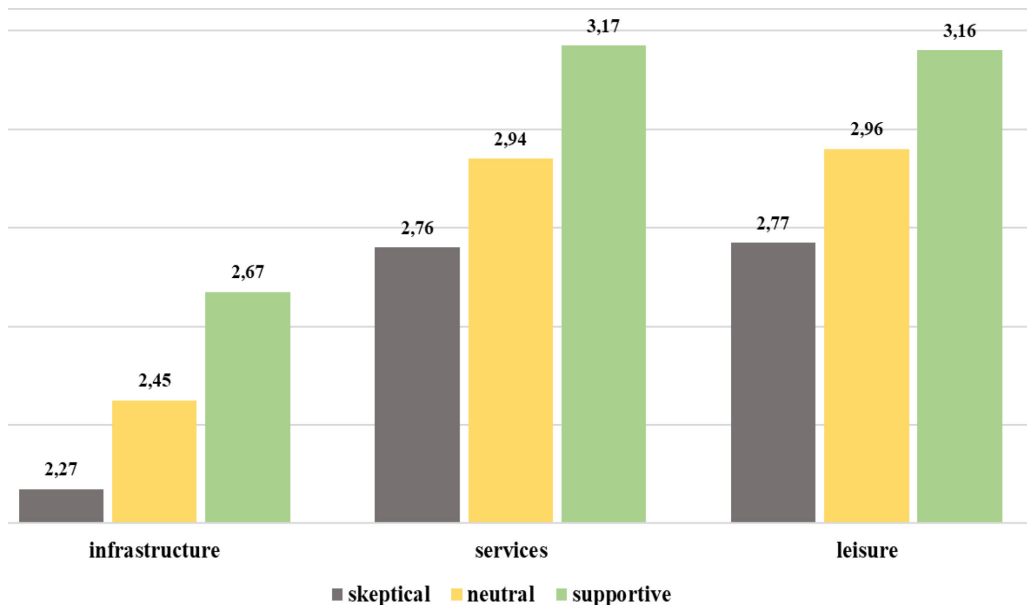
*leisure:* sports facilities, local community life, cultural life, entertainment opportunities, hospitality

The average scores formed in the three dimensions were compared in different clusters. The results show that there is a significant positive correlation between

the evaluation of the living environment and the opinions related to the effects of sports events in all three dimensions (p-values of one-way ANOVA are 0.000 for each dimension (Figure 1).

The second set of factors in this dimension is subjective well-being, which was assessed in five categories using a ten-point scale reflecting self-rating. The results are similar to those for satisfaction with the living environment, with all the characteristics examined showing a significant positive relationship with the evaluation of the impact of sporting events (Table 6).

The third dimension of background factors is related to sports. In this dimension, we look at sports activity on the one



1. ábra: Az életkörülményekkel való elégedettség dimenzióinak átlagos pontszáma klaszterenként

Source: Own research, 2020

Forrás: saját kutatás, 2020

hand, and interest in sports and sporting events on the other. The correlations between the variables examined and cluster membership are significant in all cases, and it can be said that both active and passive engagement in sports has a positive effect on the perception of the impact of sporting events on the city, on local economy, and society (Table 7).

The results of the cluster analysis show that in the case of the present survey, the typology presented earlier cannot be really validated, the attitudes shift in the same direction in a relatively uniform way, so the dimensions behave similarly. It can be seen that we can basically talk about a linear hierarchy, no real outlier group can be identified.

### Discussion and conclusions

Máté formed five clusters: those with a positive attitude, opponents, neutrals concerned about their environment,

pessimists and really enthusiastic ones (Máté, 2019). The results of Del Chiappa are showed that residents' perceptions and attitudes were not homogeneous. Four clusters were specifically identified: „supporters”, „neutral”, „enthusiastic but culturally and environmentally concerned” and „critics”, of which „supporters” formed the largest segment (Del Chiappa et al., 2016: 44). In this paper, in order to characterize the three groups formed (supportive, neutral, sceptical) from the cluster analysis, we examined three distinctive sets of background factors.

The first set of factors, socio-demographic characteristics, did not show a significant relationship with the perception of the impact of sporting events, suggesting that the age, education, subjective financial situation, and place of residence of respondents do not significantly influence attitudes.

Table 6. Average scores of subjective well-being by clusters  
6. táblázat: A szubjektív jólét átlagpontszáma klaszterek szerint

Satisfaction with	Skeptical	Neutral	Supportive	Overall	p-value (Anova)	Relation
financial status	6.38	6.64	6.88	6.65	0.004	positive
workplace	6.78	7.22	7.61	7.23	0.000	positive
occupation	7.59	7.85	8.18	7.89	0.002	positive
health condition	7.41	7.68	8.10	7.75	0.000	positive
life in general	7.38	7.60	7.92	7.65	0.000	positive

Source: Own research, 2020

Forrás: saját kutatás, 2020

Table 7. Distribution across characteristics of sports activity and awareness  
 7. táblázat: A sporttevékenység és a tájékozottság jellemzőinek megoszlása

	Sceptical	Neutral	Supportive	Overall	p-value	Relation
<b>Age</b>						
<i>never</i>	6.5%	4.9%	4.0%	5.0%	0.045	positive
<i>less than once a week</i>	23.9%	19.8%	16.2%	19.7%		
<i>at least weekly</i>	52.9%	55.9%	55.0%	54.8%		
<i>daily</i>	16.7%	19.4%	24.8%	20.5%		
<b>Played sports as a child</b>						
<i>no</i>	12.4%	12.8%	8.4%	11.2%	0.016	positive
<i>less than 3 years</i>	13.4%	11.2%	7.5%	10.6%		
<i>more than 3 years</i>	74.2%	76.0%	84.1%	78.2%		
<b>Frequency of attendance of sports events</b>						
<i>never</i>	8.5%	3.6%	1.6%	4.2%	0.000	positive
<i>less than once a month</i>	41.0%	32.5%	25.3%	32.3%		
<i>at least monthly</i>	50.5%	63.9%	73.1%	63.5%		
<b>Intensity of following sports through media</b>						
<i>weak</i>	33.3%	26.9%	19.4%	26.1%	0.000	positive
<i>average</i>	19.0%	16.4%	12.4%	15.8%		
<i>strong</i>	47.6%	56.7%	69.3%	58.2%		

Source: Own research, 2020

Forrás: saját kutatás, 2020

In our research, the second set of factors in this dimension, subjective well-being, is showing a significant positive relationship with the evaluation of the impact of sporting events. In this case, we have similar results as Ma and Kaplanidou (2016) who found that quality of life significantly influences the support for sporting events.

In agreement with Duan's research statement, we concluded that there is a positive relationship between higher quality of life and the supporting of sports events. Our research shows that local social acceptance and positive attachment to international events is closely linked to a deeper commitment to sport. The effect is mutual, with sporting events also strengthening and deepening individuals' attachment to physical activity.

The result of the cluster analysis shows that we cannot identify specific groups of respondents for which the evaluation of certain dimensions would be spectacularly different from the general pattern of the Del Chiappa model. In accordance with the analytical results presented above, the following decisions can be made in relation to the hypotheses formulated:

H1: There is a positive link between a general positive judgment of international sports events and sports consumption activity. Based on the results, the first hypothesis is supported, because it can be said that both active and passive engagement in sports has a positive effect on the perception of the impact of sporting events on the city, on local economy, and society.

H2: There is a positive link between a

general negative judgment of international sports events and economic activity as well as higher education. Our second hypothesis was rejected because socio-demographic status did not influence evaluations of the effects of sporting events in our study.

The strengthening of local identity, of urban identity, appears as an almost identical factor, which can be assessed not only as a social effect but also as a significant sports economic force. The evaluation of the results can be further extended, with promoters associating sporting events with personal well-being and positive economic effects in the regenerating environment. The limitation of our research is that in our database the examination of sports habits of respondents shows that those who are more active or more interested in sports are understandably over-represented.



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### **Appendix**

List of statements related to the effects of international sporting events by dimension, used as individual variables for principal component analysis

#### **Local economy**

*International sporting events held in Győr...*

provide the possibility for related investments to be made with public support	create new job opportunities in the city
create new employment in the field of sports economy	give new impetus to urban development and stimulate the local economy
investments divert resources from other areas	help local trade
attract new investments to the city	

#### **City branding**

*International sporting events held in Győr provide opportunities...*

to showcase the cultural values of the city	to make the city internationally known
to promote the city to domestic tourists	to improve Győr's brand value
to improve Hungary's brand value	to serve as an advertisement for the city of Győr

#### **Tourism**

*International sporting events held in Győr...*

distract general, conference and cultural tourists arriving in the city during the event*	will have the effect of attracting more tourists to the city in the future
help the better utilisation of the city's hotel capacity	

**Infrastructure and urban development**

*International sporting events held in Győr...*

lead to improvements in transport services

result in the construction and/or renovation of new sports facilities

lead to the development of urban services

lead to the improvement of urban road network

result in new facilities, investments remain unused after the event\*

have higher expenses than revenues\*

**Local society, community integration**

*International sporting events held in Győr...*

can have the effect of creating new communities

have the effect of strengthening community cohesion

have the effect of increasing the pride and level of identity of the local community

increase the value of volunteering and voluntary work

stimulate social life

allow local people to learn about other cultures

offer local people the opportunity to develop international contacts

**Sports, healthy lifestyle**

*International sporting events held in Győr...*

inspire local people towards sports

encourage local people to try new sports

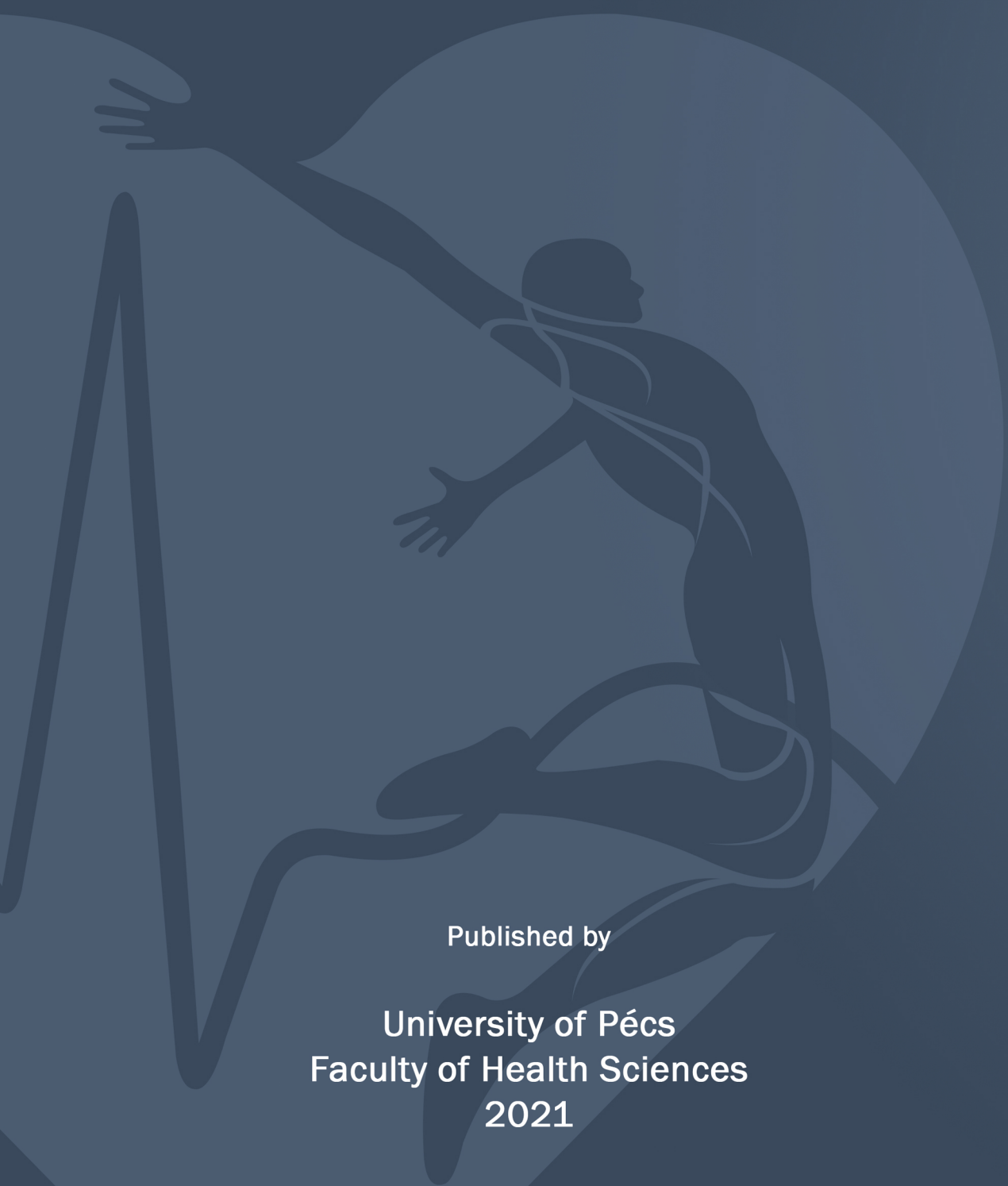
encourage young people to take up sports

improve the quality of life of local residents

improve the culture and awareness of sports

introduce new sports to the local population

encourage local people to lead healthy lifestyles



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