Original Article

Public sport policies and health: comparative analysis across European Union countries

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Abstract:

Public sport policies are believed to play a very important role in supporting the achievement of the healthy and long life of the European Union society. Encouraging participation in sports activity is now an important public policy issue, as it is argued that there are benefits in terms of health and well-being to individuals as well as society. Disease prevention through the promotion of sport can not only increase the quality of life of individuals but also reduce future government expenditure on the treatment of obesity-related diseases and diseases of an ageing population. However, even though Europeans tend to make their lifestyles healthier on average, there still persist huge disparities across European Union countries both from the perspective of the government expenditures on sport policies and health statistics. The article aims to answer the question if there are relationships between government expenditures on recreation and sport and health in different dimensions (health status: mortality and life expectancy at birth, share of people with very good perceived health and healthy lifestyle: overweight and obesity, health enhancing physical activity) across European Union. The results of the conducted analysis prove the positive relationships between the level of expenditures on sport policies and health in different dimensions. However, the strength of the relationship is weakening in the last few years period. The strongest identified relationship is between government expenditures on sport and recreation and share of people declaring different duration of health enhancing physical activities. If state is more involved into operation or support of facilities for active sporting and recreational pursuits, then people have more free and easy access to sport activities, probably they will more eagerly do this. The article concludes with the public policy implications of increasing this kind of expenditures to achieve the aim of improving different dimensions of health across the European Union society.

Key Words: sport, public policies, health

Introduction

Public sport policy plays a very important role in supporting the achievement of the recommended levels of physical activity in the European population. Taking part in sport and physical activities benefits individuals', society's health and the economy (Khan, et. al., 2012; Coenders, et. al., 2017, Lera-Lopez, et.al., 2016). The aim to improve health status through sport and physical activity across European society was undertaken not only by the European Commission by also by Member States in the last decade. The growing economic and social impact of sport has secured it an important place in EU strategies and programmes (Eurostat, 2018). Accordingly, the European Commission is taking action in policy areas including sport and health. One key aspect is implementing the 2013 Council Recommendation on promoting health enhancing physical activity across sectors. Implementation is closely monitored, using a set of indicators and in cooperation with the EU Member States and the World Health Organisation. The economic dimension of sport remains an important consideration and is supported through policies, which derive the best possible economic benefits for European citizens. The European Union follows the EU Work Plan for Sport (2017-2020) and The White Paper for Sport, which concentrates on sport's economic potential for European economy and individuals (https://ec.europa.eu/sport/policy/economy_en, available: 20.02.2020). Due to its growing impact on Europe's economy and society, sport has gained an important place in European strategies and programmes, such as for instance Erasmus+ Sport programme, which helps develop the European dimension of sport, boosting cooperation between sports organisations, public authorities and other parties (<https://ec.europa.eu/eurostat/web/sport>).

The Directorate General for Youth, Sport, Education and Culture (DG EAC - the branch of the European Commission) is responsible for the development of evidence-based policy in the field of sport, as well as fostering cooperation, and managing initiatives in support of physical activity and sport across Europe

(https://ec.europa.eu/sport/policy_en, available: 20.02.2020). Among the priorities in field of sport policies are several important objectives connected with health:

- to encourage physical and mental fitness and to fight obesity through participation in regular physical activity
- to promote greater participation in sport through physical education programmes in schools (https://ec.europa.eu/sport/about_en).

Besides all the sport policies undertaken the sport participation is still relatively low. There is more than a half Europeans who declare no time spent on health enhancing activities and there is more than a half Europeans (18 or older) with overweight. Worrying statistics are also presented by the life expectancy at birth. Even though life expectancy at birth increased from 80 to 83 (females) and from 75 to 77 (males) in the last decade (on average EU-27¹), the healthy life years at birth are much lower, even though increased from 61 to 63 years (females) and 61 to 62 (males) in the same time (on average EU-27). Therefore, public sport policies that can enhance more time spent on physical activity can be used to tackle the problem of overweight and to prevent diseases connected with obesity and the lack of physical activity across EU. However, most researches focus on public sport policies and participation in sport (Dallmeyer, 2018) or sport participation and health relationships (Khan, et.al., 2012, Malm, et.al., 2019, Coenders, et. al., 2017). While the public sport policies (government expenditures on sport) are seen necessary to keep sport affordable through including groups that lag behind in sport participation (Hoekman, 2017).

In this perspective, the problem hitherto unexplained, which this article is trying to solve, is if the health status is interrelated to the level of government expenditures on sport and recreation. In order to evaluate the relationships between public sport policies and different dimensions of health Pearson's correlation coefficient will be calculated for the years when particular data were available. The article also aims to identify the disparities between EU member states from the perspective of government expenditures on sports and recreation (EUR per capita) and health (health status: mortality and life expectancy at birth, share of people with very good perceived health and healthy lifestyle: overweight and obesity, time spent on health enhancing physical activity). The analysis allows to find the countries which are at the most vulnerable position. The changes in the gap between the countries with the highest and lowest level of government expenditures will be also analysed. The countries will be ranked by the level of expenditures on sport and recreation.

Material & methods

Although there are several common policies implemented in EU, there were huge disparities between EU countries observed when government expenditures on sport and health characteristics were analysed. 27 European Union countries were included into the analysis and considered as objects. All the data were obtained from Eurostat.

To evaluate the public sport policies in the EU level and member states dimension the Eurostat data on government expenditure on sports and recreation are used. The data presented in the analysis comes from Classification of the Functions of Government (COFOG) statistics. The group consists of expenditures on recreational and sporting services which includes:

- provision of sporting and recreational services;
- administration of sporting and recreational affairs;
- supervision and regulation of sporting facilities;
- operation or support of facilities for active sporting pursuits or events (playing fields, tennis courts, squash courts, running tracks, golf courses, boxing rings, skating rinks, gymnasias, etc.);
- operation or support of facilities for passive sporting pursuits or events (chiefly specially equipped venues for playing cards, board games, etc.);
- operation or support of facilities for recreational pursuits (parks, beaches, camping grounds and associated lodging places furnished on a non-commercial basis, swimming pools, public baths for washing, etc.);
- grants, loans or subsidies to support teams or individual competitors or players (Eurostat, 2019, p. 220).

In 2017, the EU's 27 Member States spent almost €51 billions of government expenditure on recreation and sport. Overall, in the EU, the expenditure on recreation and sport has remained stable as a percentage of total expenditure for last several years – their share was 0.7% of total government expenditure (ranged from 0.2% in Croatia to 2.5% in Hungary) and also as a percentage of GDP in the same period – their share was 0.3 %GDP (ranged from 0.1% GDP in Croatia to 1.2% GDP in Hungary). However, to conduct comparative analysis between countries the government expenditures on recreation and sport were converted into EUR per capita. Government expenditures on recreation and sport stood at the level of 92EUR per capita (average UE-27) in 2017. They ranged from 13 EUR per capita in Croatia to 256 EUR per capita in Sweden. Government expenditures on recreation increased from the level of 54 to 92 EUR in the period (2001-2017). The average year growth rate was 3.3% on EU-27. Bulgaria, Romania, Baltic States and Hungary were the countries characterized by the highest average growth rates (respectively 15%, 13%, 13%, 13%). It can be partly explained as a result of

¹EU-27 (European Union Member States without Luxembourg in 2020).

very low levels of these expenditures in 2001. The lowest average year growth rate was observed in United Kingdom (there was a negative rate of -2%), though this country was characterized by the relatively high level of government expenditures on sport and recreation in 2001 (86 EUR per capita). As a result of these changes United Kingdom moved down in the ranking from 8th place to 16th position. Despite the fastest growth rates noted in Bulgaria and Romania, Lithuania, Latvia, these countries remained at very low positions in the ranking. However, the significant improvement was observed in Hungary and Estonia (from 19th to 6th position and from 20th to 9th position respectively) (Table 1).

Table1. Government expenditures on sport and recreation (EUR per capita) in EU countries in 2001, 2005, 2010, 2015, 2017 and the average rate of change in the period 2001-2017

Country	Government expenditures on recreation and sport in 2001	Place in the ranking in 2001	Government expenditures on recreation and sport in 2005	Place in the ranking in 2005	Government expenditures on recreation and sport in 2010	Place in the ranking in 2010	Government expenditures on recreation and sport in 2015	Place in the ranking in 2015	Government expenditures on recreation and sport in 2017	Place in the ranking in 2017	Average yearly rate of change in the period 2001-2017
Sweden	127.3	3	138.9	4	201.5	2	248.5	1	256.0	1	4.5
Finland	111.9	4	132.0	5	163.7	5	190.4	4	206.6	2	3.9
Netherlands	149.7	2	184.1	1	240.4	1	201.5	2	199.5	3	1.8
Denmark	167.7	1	182.8	2	182.1	3	191.4	3	192.8	4	0.9
France	108.5	5	149.4	3	181.3	4	180.7	5	184.1	5	3.4
Hungary	22.2	19	32.0	20	35.2	21	58.0	17	150.9	6	12.7
Belgium	87.6	7	113.2	6	138.8	6	137.0	6	148.5	7	3.4
Austria	81.9	9	90.2	8	103.8	10	116.8	7	115.7	8	2.2
Estonia	19.3	20	43.1	16	50.9	19	61.5	15	100.2	9	10.8
Germany	88.2	6	81.5	10	98.0	12	92.7	8	99.6	10	0.8
Spain	45.1	15	74.4	11	123.2	7	90.5	9	92.8	11	4.6
EU-27	54.2	13	67.4	14	85.5	13	85.3	10	91.8	12	3.3
Czechia	25.8	17	41.6	17	63.9	15	61.4	16	76.5	13	7.0
Italy	62.0	11	69.8	13	60.9	17	69.6	12	73.2	14	1.0
Cyprus	60.8	12	88.0	9	99.1	11	68.5	13	70.0	15	0.9
United Kingdom	85.7	8	97.8	7	113.6	9	79.0	11	60.6	16	-2.1
Ireland	53.8	14	73.8	12	61.7	16	56.7	18	59.5	17	0.6
Slovenia	24.8	18	37.7	19	113.8	8	63.5	14	57.6	18	5.4
Greece	28.7	16	39.6	18	35.5	20	53.1	20	53.2	19	3.9
Portugal	63.9	10	64.5	15	66.9	14	55.5	19	52.6	20	-1.2
Poland	14.3	21	18.6	21	59.9	18	43.6	21	46.7	21	7.7
Latvia	4.8	23	12.2	24	17.7	25	32.5	23	41.4	22	14.4
Malta	11.0	22	15.4	22	21.5	23	28.4	24	32.2	23	6.9
Lithuania	3.8	27	9.2	26	15.9	26	18.5	27	30.9	24	14.0
Romania	3.8	26	9.4	25	21.4	24	23.6	26	25.0	25	12.5
Slovakia	4.7	24	12.5	23	24.6	22	25.7	25	23.4	26	10.5
Bulgaria	1.6	28	2.3	28	6.5	27	43.6	22	15.6	27	15.4
Croatia	3.8	25	4.9	27	6.5	28	10.7	28	13.3	28	8.1

Note: Countries were ranked by the level of government expenditures on sports and recreation in 2017. The grey areas are used to indicate maximum and minimum level of expenditures on sport and recreation in each year. Source: own preparation on the basis of Eurostat data.

The important role physical activity plays in health is underlined by international institutions (WHO, 2011; European Commission, 2008). The focus of public policy on sports is primarily the prevention of diseases

and increasing health status. In according to the recommendations of the World Health Organisation (WHO) at least 150 min per week of moderate-intensity psychical activity (sports, walking, doing household chores, gardening) for adults aged 18 or over is required for physical health benefits (WHO, 2011).

However, the time spent on sports in European Union is too short and not satisfactory. Around 50 % of the European Union (EU) population aged 18 or over did not do any exercise in 2014, in contrast with the rest of the EU population, who undertook some form of sports, fitness or recreational activities in their leisure time. In a typical week, just over one quarter (20 %) of the EU population on average exercised for up to 2,5 hours, 14 % for between 3 and 5 hours and 16 % for 5 hours or more. The proportion of those exercising more is higher for men than for women. While the proportion of time spent on exercise tends to decrease with age, it tends to increase with the education level of the individual. Overall in the EU, 40.5% of the highly educated people spent at least two and a half hours per week on physical activities, compared to less than a quarter (19.2%) of those with a low education level (https://ec.europa.eu/eurostat/statistics-explained/index.php/Health-enhancing_physical_activity_statistics).

In the EU the high disparities were found, the highest proportions of people who spent at least two and a half hours per week exercising were found in Nordic countries. The share of people doing physical activities was 55% in Finland and Denmark, 54% in Sweden. In contrary Romania and Bulgaria recorded the lowest shares (9% and 10% respectively) (Table2). What is important and dangerous for future health is the high share of population (Romania and Bulgaria – more than 80%; Greece – 74%, Lithuania and Portugal more than 60%) with zero minutes a week. On contrary in the countries with the highest share of population spending more than 5 hours on physical activity there is only 19% of population doing no physical exercises at all (Denmark 19%, Sweden 25%, Austria 25%, Finland 23%).

Table 2. Time spent on health-enhancing (non-work-related) physical activity in EU-27 and EU member countries in 2014

Country/Duration	Zero minutes	From 1 to 149 minutes	From 150 to 299 minutes	150 minutes or over	300 minutes or over
Denmark	18.7	26.7	23.6	54.6	31.0
Sweden	24.6	21.3	23.4	54.1	30.7
Austria	25.1	24.6	21.0	50.4	29.4
Finland	23.0	22.4	26.4	54.6	28.2
Germany	28.8	22.9	21.8	48.3	26.4
Slovenia	39.1	23.0	15.5	37.9	22.4
Spain	51.0	15.0	12.9	34.0	21.1
United Kingdom	41.2	21.8	16.3	36.9	20.7
Malta	47.3	17.7	15.5	34.9	19.4
Hungary	43.4	27.9	11.8	28.6	16.8
EU-27	50.1	20.0	13.8	29.8	16.0
Slovakia	47.7	22.9	14.0	29.4	15.4
Ireland	52.5	18.5	14.6	29.1	14.5
Czechia	47.4	24.2	14.3	28.4	14.1
Estonia	52.3	24.5	11.1	23.2	12.1
Latvia	51.4	25.3	11.5	23.3	11.8
France	49.0	26.0	13.3	25.0	11.7
Croatia	58.6	22.0	8.8	19.4	10.6
Cyprus	60.2	14.6	14.8	25.3	10.4
Portugal	62.8	18.8	9.2	18.4	9.3
Greece	74.1	9.2	7.6	16.7	9.1
Italy	65.0	16.8	9.4	18.2	8.9
Lithuania	63.7	16.6	10.8	19.7	8.9
Poland	58.8	24.1	9.0	17.1	8.1
Bulgaria	82.7	7.3	4.5	9.9	5.5
Romania	84.4	7.0	4.6	8.6	4.0

Note: The countries were order by the last column – from the highest share of population in each country spending the 300 minutes or over on health enhancing physical activity.

Source: own preparation on the basis of Eurostat database.

Another dimension of health status is mortality. There were also huge disparities observed in EU countries. The number of deaths per head of population was highest in Bulgaria (1.5), Latvia, Lithuania (1.4) and Romania, Hungary (1.3) in 2017. On contrary mortality was lowest in Ireland (0.6) and Cyprus (0.7) in the same year. Although the life expectancy at birth increased in the last decade from the level 80 to 83 (females) and from 75 to 77 (males) on average in European Union countries, the healthy life years in absolute value at birth were only 63 (females) and 62 (males) in 2017 on average in EU-27. During the last decade the increase in healthy life years was only 2 years (females) and 1 year (males).

What is more there were also disparities across EU countries bigger when healthy life years at birth are considered than life expectancy at birth. Healthy life years at birth were highest in Sweden (73 - both females and males) and shortest in Latvia (55 - females, 52 - males) in 2016. It means that people in Sweden has statistically more than 40% healthy life years than in Latvia. When life expectancy at birth is considered the longest life have Spanish women (86.3 years) and Italian men (80.8 years) and the shortest life have Bulgarian women (78.5 years) and Latvian men (69.8 years).

To evaluate the health status the analysis of share of people perceiving good health is very useful. The share of people perceived very good and good health slightly increased on average in European Union from the level 64% in 2010 to 67% in 2017. However, there were enormous disparities between the EU countries in this field. The highest share of people perceiving their health very good and good was in Ireland - 83% in 2017.

The lowest share was observed in Baltic countries - with the worst situation in Lithuania and Latvia (44%). It means that more than a half the population in Lithuania and Latvia perceive their health as bad. This calls a question if the public sport policies can help to increase the health improving activity and therefore health perception.

Obesity² is a serious public health problem, as it significantly increases the risk of different diseases. For specific individuals, obesity may further be linked to a wide range of psychological problems. For society as a whole, it has substantial direct and indirect costs that put a considerable strain on health care and social resources. In 2017, 15.2% of people over the age of 18 in the EU were obese, and another 36.8% were pre-obese. This means more than half of the population above the age of 18 in the EU were overweight. Between 2014 and 2017, the share of overweight people increased by 1 percentage point. More than a half of EU- 27 population were overweight (54% in 2017). At the member state level 12 countries show rise in the overweight. The lowest share of overweight people was in Italy (45% in 2014 and 2017). The highest share of overweight people was in Malta (61% in 2014) and Romania 63% in 2017.

The high share of overweight people, and low share of people spending recommended by EC and WHO time on physical activity, as also the huge disparities between member states countries triggers a question if public sport policies can help to solve this problem through expenditures on sport and recreation. Promotion of sport may be important action in achieving the goal of limiting the prevalence of overweight and protection against the diseases and increased mortality.

Results

The high and strong negative correlation was observed (Pearson's correlation coefficient $r=-0,70$) between government expenditure on sport and recreation (EUR per capita) and the level of these expenditures in 2001. The lower the level of government expenditures on sport in 2001 the higher the average growth rate. Average growth rate in the period of 2001-2017 was 3.3% on average in EU countries and ranged from minimum -2% (United Kingdom) to 15% (Bulgaria).

Therefore, the question to answer is if disparities between EU countries decreased or increased.

The disparities are measured by the coefficient of variation and absolute (max-min) and relative relation (max/min - how many times higher were the expenditures in the country with the highest level of expenditures to the min in each year) of the government expenditures on sport and recreation. Coefficient of variation decreased from 86% in 2001 to 71% in 2017.

Absolute difference increased from 166 EUR to 243 EUR in 2017. However, the relative difference decreased. The highest level of government expenditures on sport was only 19 times higher than the lowest level of these expenditures in 2017. This relation was more than five time lower than in 2001, when it stood at the level 106 (Table 3).

²The indicator measures the share of obese people based on their body mass index (BMI). BMI is defined as the weight in kilograms divided by the square of the height in metres. People aged 18 years or over are considered obese with a BMI equal or greater than 30. Other categories are: underweight (BMI less than 18.5), normal weight (BMI between 18.5 and less than 25), and pre-obese (BMI between 25 and less than 30). The category overweight (BMI equal or greater than 25) combines the two categories pre-obese and obese (Eurostat, 2014).

Table 3. Average, coefficient of variation, max, min, max-min, max/min – statistical characteristics of government expenditures on sport and recreation in EU countries in the period 2001-2017

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Average	54.2	59.2	60.9	62.8	67.4	73.4	78.7	85.0	82.4	85.5	84.0	81.8	81.0	82.7	85.3	86.3	91.8
Coefficient of variation	86.3	82.4	83.9	81.0	78.1	75.0	73.1	71.8	75.6	73.8	74.4	79.8	80.6	76.0	72.8	75.0	70.8
max	167.7	170.4	184.5	177.6	184.1	199.0	207.3	226.9	251.9	240.4	230.1	232.7	245.0	256.3	248.5	260.2	256.0
max	Denmark	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands	Sweden	Sweden	Sweden	Sweden	Sweden	Sweden
min	1.6	1.8	2.5	2.8	2.3	3.5	4.9	7.2	4.8	6.5	5.5	7.4	7.6	10.5	10.7	11.8	13.3
min	Bulgaria	Bulgaria	Bulgaria	Bulgaria	Bulgaria	Bulgaria	Bulgaria	Croatia	Bulgaria	Bulgaria	Croatia	Croatia	Bulgaria	Croatia	Croatia	Bulgaria	Croatia
max-min	166.1	168.6	182.0	174.8	181.8	195.4	202.4	219.7	247.1	234.0	224.6	225.3	237.4	245.8	237.8	248.4	242.7
max/min	105.9	93.1	73.9	64.3	79.1	56.2	42.1	31.6	53.0	37.2	41.7	31.5	32.3	24.4	23.2	22.1	19.3

Source: own preparation on the basis of Eurostat database.

In order to answer the research question about the relationships between government expenditures on recreation and sport and health status across the European Union countries the Pearson's correlation coefficient was calculated.

Health status is a multi-dimensional space which is characterized by set of potential diagnostic variable with may be correlated with state's sport policies. In the paper such characteristics of health status are analysed as: mortality, life expectancy at birth, healthy years at birth, share of people with very good and good perceived health and healthy lifestyle: overweight and obesity, health enhancing physical activity.

Table 4. The Pearson's correlation coefficient between government expenditures on sport and recreation and mortality

r/year	2011	2012	2013	2014	2015	2016
r=	-0.48	-0.48	-0.43	-0.39	-0.43	-0.36

Source: own preparation on the basis of Eurostat database.

The Pearson's correlation coefficient between government expenditures on sport and recreation and mortality was negative and moderate. The higher the government expenditures on sport and recreation, the lower the mortality. However, the strength of this relationship decreased in the analysed period (Table 4).

Table 5. The Pearson's correlation coefficient between government expenditures on sport and recreation and life expectancy at birth of females and males

r/year	2010	2011	2012	2013	2014	2015	2016
Female	0.61	0.58	0.56	0.51	0.49	0.52	0.41
Male	0.65	0.61	0.59	0.57	0.53	0.57	0.48

Source: own preparation on the basis of Eurostat database.

The Pearson's correlation coefficient between government expenditures on sport and recreation and life expectancy at birth of females and males was positive and relatively strong. However, the strength of this relationship decreased in the analysed period. The correlation was slightly stronger when the relationship is measured with men's life expectancy. The higher the level of the government expenditures on sport and recreation the longer life. However, the relationship between healthy life years and government expenditures on sport and recreation occurred to be insignificant (Table 5).

Table 6. Pearson's correlation between time spent on health-enhancing (non-work-related) physical activity in EU countries in 2014 and government expenditures on recreation and sport in 2014

r/ time spent on sport	Zero minutes	From 1 to 149 minutes	From 150 to 299 minutes	150 minutes or over	300 minutes or over
Pearson correlation coefficient	-0.64	0.33	0.70	0.68	0.65

Source: own preparation on the basis of Eurostat database [hlth_ehis_pe2e], [gov_10a_exp].

The higher the government expenditures on sport and recreation the more time was spent in European Union member countries on health-enhancing physical activity. What is important the Pearson correlation coefficient increased with the time spent on physical activity from 0.33 (from 1 to 149 minutes) to 0.65 (300 minutes or over). The strong negative correlation was observed between government expenditures on sport and recreation and the lack of physical activity. This proves the importance of appropriate policies enhancing physical activities and health in EU countries (Table 6, Fig.1).

Figure 1. Government expenditures on sport and recreation (horizontal axis, EUR per capita) and share of people who spend more than 150 minutes a week on health enhancing activities (% , vertical axis; left figure) and share of people who spend zero minutes a week on health enhancing activities (% , vertical axis; right figure).

Source: own preparation on the basis of Eurostat database [hlth_ehis_pe2e], [gov_10a_exp].

Healthy lifestyle includes physical activity. The high share of European population spending no time on health enhancing physical activity is one of the reasons of obesity. The relatively strong and negative relationship (however decreasing from the 2014 to 2017) shows that the higher the government expenditures on sport the lower the share of overweight people (Table 6).

Table 6. Pearson's correlation between government expenditures on recreation and sport and the share of overweight population in 2014 and 2017

r/year	2014	2017
r	-0.62	-0.53

Source: own preparation on the basis of Eurostat database.

Personal life satisfaction, well-being, perceiving the health as good or very good is undoubtedly connected with engagement in sport activities. The Pearson's correlation coefficient between government expenditures on sport and share of people perceiving their health good and very good was positive and moderate. However, the higher the government's involvement in supplying the public sport and recreational services, the more people perceive their health good, probably because better and easier access to such services, and therefore more physical activity.

Table 7. Pearson's correlation between government expenditures on recreation and sport and the share of population perceiving their health as good and very good in 2010- 2016

r/year	2 010	2 011	2 012	2 013	2 014	2 015	2 016
r	0,54	0,51	0,52	0,48	0,47	0,47	0,38

Source: own preparation on the basis of Eurostat database.

Discussion

Sport is a sphere of human activity that is affected by the state's involvement through sport policies (Houlihan, 2014, Chien-Yu, 2008). Even though there is a general consensus between policy makers in European Union and scientist that public sport policies play an important role in creating a good habits and healthier life style across Europeans, it was the last several years, when there has been a considerable growth in interest in the relationship between sport and health. Nowadays sport is treated as policy instrument aimed at improving the overall quality of life. Positive relationships in this field were identified for different groups of society: children (Valentini, 2019), adolescents (MD Dilsad, 2016) and elderly (Nora de Souza, 2018). Such results are consistent with the report of Stiglitz, Sen and Fitousi (2010), which pointed out that if well-being is assessed than its eight dimensions have to be taken simultaneously into account. These are not only material living standards (e.g.: GDP per capita, median equivalised disposable household income, housing conditions and income inequalities and poverty) but also immaterial quality of life (health, education, personal activities including sport and social relationships, environmental conditions, economic and physical insecurity) taken into consideration when a broad concept of well-being is evaluated. The immaterial quality of life is rather subjective from its nature. Therefore, in the economics literature, health and personal activities including sport are treated as the measure subjective well-being which can be described by e.g. share of people with good or very good perceived health.

However, despite numerous policy initiatives undertaken in the last decade in the EU (e.g.: European Week of Sport, EU Sport Forum, BeActive Awards, Erasmus +; more on https://ec.europa.eu/sport/policy/economy_en), the collective interrelationships between sport, general health, social capital and subjective well-being are not broadly analyzed in the literature. There are a few analyses that focus on one economy: UK (Downward, Rasciute, 2011), Canada (Humphreys, 2014), Netherlands (Hoekman, 2017), Germany (Dallmeyer, 2018). To the author's knowledge there are no comparative analyses focusing on sport policies and health status in EU countries.

In economic policy agenda public sport policies are treated as a means for attaining objectives like improving the society's health (Mansfield, 2016). It is even underlined, that paradigm shift in the way the value of sports appraised is urged in order to develop more effective public sport interventions (Testoni et al., 2018, p.816). A positive relationship between physical activity and health conditions has been identified by Humphreys et al. and Sarma et al. Both studies conducted in Canada. In according to the first study, participation in physical activity reduces the reported incidence of diabetes, high blood pressure, heart disease, asthma, and arthritis as well as being in fair or poor health. Increasing the intensity above the moderate level and frequency of participation in physical activity appears to have a diminishing marginal impact on adverse health outcomes. The results provided support for public policy guidelines about engaging in exercise regularly to achieve health benefits (Humphreys, et. al., 2014, p.33). The latter study investigated the impact of physical activity on obesity and chronic conditions in Canadians aged 18-75 using recursive bivariate probit approaches causal relationships between physical activity and health outcomes. We find that physical activity (i.e., walking ≥ 1 h/day) reduces the probability of obesity by five percentage points. (Sarma et. al. 2015).

Study exploring the interrelationship between sport, health and social outcomes was also conducted in the UK (Downward et. al., 2017). Potential multiplier effect of sport was identified. From a health economics perspective, sport can be seen as an investment in health and potentially a flow of activity facilitated by an accumulated stock of health. From a health policy perspective this suggests that potential multiplier effects on SWB and on general health through mediation are possible if sport is used as a policy tool. Consequently, if engagement in sport raises general health, then further sport participation becomes likely, and then subsequent general health. This is suggestive of a virtuous circle of behaviour through experience. This might explain why it has proved difficult for policy makers to encourage a more active lifestyle as evident in the persistent sedentary nature of the population (Downward et. al., 2017). Study of Dallmeyer confirmed that spending on sports is positively associated with participation in sport and exercise (Dallmeyer 2018).

The analysis conducted in this article proved there is a significant relationship between government policies on sport and recreation and different dimensions of health. The strongest identified relationship is between government expenditures on sport and recreation and share of people declaring different duration of health enhancing physical activities. If state is more involved into operation or support of facilities for active sporting and recreational pursuits, then people have more free and easy access to sport activities, probably they will more eagerly do this. The analyzed issues are for sure interrelated with other policies, like educational policies, because it is fundamental issue that people know that physical activity positively affects their health. The results of the analysis are important comparative study for the European Union countries, because of the identification of the relationship between health in different dimensions and public sport policies.

Conclusions

Public sport policies in the European Union are based on the principle that sport plays a fundamental and vital role, not only in individual health and fitness, but in shaping wider European society's healthy lifestyle. Encouraging participation in sports activity is now an important public policy issue, as it is argued that there are benefits in terms of health and well-being to individuals as well as society. Disease prevention through the promotion of sport can not only increase the quality of life of individuals but also reduce future government expenditure on the treatment of obesity-related diseases and diseases of an ageing population. Education and awareness-raising on the positive impact of sport on health is also fundamental issue to achieve this goal.

This article examines the interrelationships between public sport policies and health status and demonstrates that public expenditures in sports are positively related with share of people perceiving their health good and very good, duration of health enhancing sport activities and negatively correlated with overweight and mortality. What is important, there are huge disparities observed among the European Union countries in both fields. In almost each dimension of health status: Bulgaria, Romania and Baltic countries occurred to be most vulnerable countries. Even though expenditures on sport (EUR per capita) increased in the last several years, these countries are still at the bottom line of the ranking. The result is low involvement in health enhancing sport activities, perceiving the health as bad, relatively high share of overweight people, etc. On contrary Netherlands, Sweden, Denmark were countries with highest EUR per capita government expenditures on sport and recreation and highest share of people spending on physical activity more than 5 hours a week, perceiving their health good and very good and moderate share of overweight.

However, the results of the analysis should be interpreted with distance, because both health, mortality and life expectancy are influenced by many other factors at the same time, but it has been confirmed that there

are appropriate correlations indicating that "sport is health". Public sport policies are very important instrument improving health across EU countries.

References:

- Chien-Yu, L., Ping-Chao, L., & Hui-Fang, N., (2008). Theorizing the Role of Sport in State-Politics, *International Journal of Sport and Exercise Science*, Vol.1(1).
- Coenders, F., Mensvoort, C., Kraaykamp, G., & Breedveld, K., (2017). Does sport-participation improve health? A panel analysis on the role of educational attainment, economic deprivation and work-family load, *European Journal for Sport and Society*, Vol. 14 (1).
- Dallmeyer, S., Wicker, P., & Breuer, Ch., (2018). The relationship between sport-related government spending and sport and exercise participation: The role of funding size, period, and consistency, *International Journal of Health Promotion and Education*, Vol. 56, Issue 4-5.
- Downward, P., Hallmann, & Rasciute, S., (2017). Exploring the interrelationship between sport, health and social outcomes in the UK: implications for health policy. *The European Journal of Public Health*, Vol. 28, No. 1, pp. 99-104.
- Downward, P., & Rasciute, S., (2011). Does sport make you happy? An Analysis of the well-being derived from sports participation. *International Review of Applied Economics*, Vol. 25, Issue 3.
- European Commission, (2011). *Developing the European dimension in sport*, Brussels, (COM(2011) 12 final).
- European Commission, (2008). *EU physical activity guidelines – recommended policy actions in support of health-enhancing physical activity*, Brussels.
- European Commission, https://ec.europa.eu/sport/policy/economy_en (available: 20.02.2020).
- Eurostat, (2014). *Statistics explained: Overweight and obesity — BMI statistics*.
- Eurostat, (2018). *Sport Statistics 2018 edition*.
- Hoekman, R., Breedveld, K., & Kraaykamp, G., (2017). Providing for the rich? The effect of public investments in sport on sport (club) participation of vulnerable youth and adults, *European Journal for Sport and Society*, Vol. 14, Issue 4.
- Houlihan B., (2014). *The government and politics of sport (2014)* Routledge Library Editions, Sport Studies Vol.6, London and New York).
- Humphreys, B.R., McLeod, L., & Ruseski, J.E., (2014). Physical activity and health outcomes: evidence from Canada. *Health Economics* No. 23.
- Khan, K.M., Thompson, A.M, Blair, S.N., Sallis, J.F., Powell, K.E., Bull, F.C. *et al.*, (2012). Sport and exercise as contributors to the health of nations, *Lancet*, Vol. 380.
- Lera-Lopez, F., Wicker, P., & Downward, P., (2016). Does government spending help to promote healthy behavior in the population? Evidence from 27 European countries, *Journal of Public Health*, Vol.38, Issue: 2.
- Malm, Ch., Jakobsson, J., & Isaksson, A., (2019). Physical Activity and Sports—Real Health Benefits: A Review with Insight into the Public Health of Sweden, *Sports (Basel)*, Vol 7 (5), Issue 127.
- Mansfield, L., (2016). Resourcefulness, reciprocity and reflexivity: the three Rs of partnership in sport for public health research. *International Journal of Sport Policy and Politics*, 8:4, 713-729, DOI: 10.1080/19406940.2016.1220409.
- MD Dilsad, A., King Yan Ho, W., Zazed, K., Van Niekerk, R.L., Jong-Young, Lee, (2016). The adolescent age transition and the impact of physical activity on perceptions of success, self-esteem and well-being, *Journal of Physical Education and Sport*, 16(3).
- Nora de Souza, L.N., Berbert de Carvalho, P.H., & Caputo Ferreira, M.E., (2018). Quality of life and subjective well-being of physically active elderly people: a systematic review, *Journal of Physical Education and Sport*, Vol. 18(3).
- Sarma, S., Devlin, R.A., Gilliland, J., et. al., (2015). The effect of leisure-time physical activity on obesity, diabetes, high bp and heart disease among Canadians: evidence from 2000/ 2001 to 2005/2006. *Health Economics* no.24, pp. 1531-47.
- Stiglitz, J., Sen, A., & Fitoussi, J., (2010). Report by the Commission on the Measurement of Economic Performance and Social Progress, <https://ec.europa.eu/eurostat/documents/118025/118123/Fitoussi+Commission+report> (available 19.02.2020).
- Testoni, S., Mansfield, L., & Dolan P., (2018). Defining and measuring subjective well-being for sport policy. *International Journal of Sport Policy and Politics*, Vol.10, Issue 4.
- Valentini M., Virgili, L., D'Isanto, T., & Federici, A., (2019). Body moving towards the "WELL-BEING", *Journal of Physical Education and Sport*, Vol.19 (Supplement issue 5), Art 303.
- World Health Organization, (2011). *Global Recommendations on physical activity for health*, <https://www.who.int/dietphysicalactivity/leaflet-physical-activity-recommendations.pdf>
- World Health Organization, (2011). *Promoting sport and enhancing health in European Union countries: a policy content analysis to support action*, Regional Office for Europe, Copenhagen.