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Christopher Huth[1]

Nutritional behaviour of (Non-)eSports players – a comparative study

[1] Universität der Bundeswehr München, Germany

Abstract

Demand for eSports has generated considerable attention from the sport, event, and entertainment industries. However, time is spent playing and watching the computer games and is not related to physical activity. The aim of this study is to focus on nutritional behaviour between persons who practice eSports and those who do not practice eSports. A standardized questionnaire was implemented and, in total, 339 completed questionnaires were generated. The results show that participants who are not playing eSports games are significant healthier, doing more sports, are older, have higher incomes, eat more fruits and vegetables, but drink more caffeine and alcohol. In summary, the study shows that playing eSports games tend to have a negative impact on a healthy and sporting lifestyle.

Keywords: eSports, health, nutritional behaviour, sports participation

Introduction

Until a few years ago, playing computer and video games was seen as a hindrance to human social life. Today, players who have enough ambition and skills to successfully compete with others in different electronic games are praised by fans and earn prizes in the millions. In July 2019, a 16-year-old American won the *Fortnite* World Championship and earned $1.5 million in prize money (SZ, 2019). Consequently, consumer demand – especially from adolescents – for eSports and the growth of organized video game competitions has generated considerable attention from the sports, event, and entertainment industries (Funk, Pizzo, & Baker, 2018). Therefore, eSports – organized video game competitions – are growing in popularity, with top tournaments drawing crowds of spectators and rivalling traditional sporting events (Pizzo et al., 2018). Interestingly, eSports have many of the components of traditional sports, such as players, teams, managers, leagues, competitions, endorsement deals and player transfer fees, but they also have a dark side, including match fixing and doping (Jenny, Manning, Keiper, & Olrich, 2017).

In the literature, eSports are defined as a form of sports in which the primary aspects of the sport are facilitated by electronic systems (Hallmann & Giel, 2018). Additionally, eSports have been described as the competitive playing of computer or video games in single or multiplayer mode (Müller-Lietzkow, 2018). The German eSport Bund adds that game skills – defined by hand-eye coordination and speed of reaction – as well as tactical issues – game overview and game understanding – are necessary central achievements in eSports (eSport Bund, 2019). Finally, Wagner (2006) describes eSports as a kind of umbrella term for sports disciplines in which the exercisers train mental or

[1] Christopher Huth, e-mail: christopher.huth@unibw.de, ORCID: 0000-0002-9433-8330

physical abilities using information and communication media and compete under prescribed rules.

eSports are usually considered comprehensive, and no differences between different users are made. Notably, however, that there is a clear difference between professional and amateur players due to the immense performance difference (Kaiser, 2016). To define amateur play, Breuer (2011) describes a subset of gaming that does not involve performance-based gaming behaviour, including the occasional use of network-based games and the use of computer and video games in general. According to Drews (2012), only 1% of e-athletes manage to earn money by playing and thus qualify as professional e-athletes.

From a sports perspective, according to which sports involve physical effort, time participating in eSports is spent playing and watching computer games and does not involve physical activity. However, initial findings have shown that far fewer "gamblers" are lazy than expected (Froböse et al., 2019). Nevertheless, a major problem among e-athletes is overweight (ebd., 2019). More than one in four e-athletes (26.8%) is overweight, and e-athletes spend an average of 20 hours or more in the virtual space. In this context, a new WHO-led study showed that the majority of adolescents worldwide are not sufficiently physically active, which places their current and future health at risk (WHO, 2019).

In line with the study by Froböse et al. (2019), the aim of this study is to examine nutritional behaviour. The central question concerns the extent to which nutritional behaviour differs between persons who practice eSports and those who do not. Among other sports- and sociodemographic variables, nine food- and drink-related variables are included in the analysis. The focus of the present study is on amateur sports. In the current discussions on whether eSports should be accepted by sports associations, the main arguments are aimed at grassroots sports in particular. Young people are especially discussed, as they could be (negatively) influenced by eSports. The position of the German Olympic Sports Confederation (DOSB) is that eSports in their entirety do not fit under the umbrella of the DOSB. In contrast to well-being-oriented sports, which the DOSB represents with its clubs and associations and in which decisions about rules, gaming and competition systems are made democratically, eSports rely on profit-oriented global companies (DOSB, 2019). Only these companies determine the rules, content and forms of play. Additionally, the clearly visible and explicit depiction of the killing of virtual opponents in many eSports games is incompatible with the ethical values represented in sports (ebd., 2019). Finally, there is no recognizable sport-determining motor activity in eSports (ebd., 2019). Based on this line of argument, Borggrefe (2018) argues that competitive computer games are not characterized by a sport-determining motor activity; that they counteract the health and educational effects of sports and thus endanger their social legitimacy; and finally, that they have no organizational structure that meets the requirements of organized sports.

Before the results of the study are presented, the method used is described in the next section. The article concludes with a discussion including a summary and an outlook.

Method

For the present study, a standardized questionnaire was administered. The questionnaire can be divided into three parts. The first part included questions about personal computer behaviour and the practice of sports. The second part of the questionnaire asked about

personal food and drink consumption behaviour. In total, nine different nutritional categories were included in the analysis. The final section collected sociodemographic data of the participants. The following table presents all the variables.

To measure the central dependent variable, we asked the participants if they regularly played eSports games [ESPORTS]. The participants were then asked (1) how healthy they thought their nutritional habits were [HEALTH_EAT], (2) whether they were participating in regular sports [SPORT] and (3) how good their knowledge of the participants in the field of eSports was [KNOWHOW].

To determine the participants' nutritional behaviour, the frequency of consumption of various consumer goods groups over the past 4 weeks was assessed. In detail, the participants were asked how often they consumed fruits [FRUITS], vegetables [VEGETABLES], alcohol [ALCOHOL], caffeine [CAFFEINE], sugary products [SUGAR], milk products [MILK], meat [MEAT], noodles [NOODLES] and fast food [FASTFOOD] in the last month. Finally, participants were asked to report their sex [SEX], age [AGE], educational attainment [EDU], and net monthly income [INC].

Table 1: Overview of the variables

Variable	Description	Scale
Dependent variable		
ESPORTS	Playing eSports games (1 = yes; 0 = no)	Nominal
Personal variables		
HEALTH_EAT	Healthy eating (5-point scale)	Ordinal
SPORT	Practice of sports (1 = yes; 0 = no)	Nominal
KNOWLEDGE	Knowledge of eSports (3-point scale; none to expert)	Ordinal
Food- and drink-related variables		
FRUITS	Frequency of fruit consumption (9-point scale)	Ordinal
VEGETABLES	Frequency of vegetable consumption (9-point scale)	Ordinal
ALCOHOL	Frequency of alcohol consumption (9-point scale)	Ordinal
CAFFEINE	Frequency of caffeine consumption (9-point scale)	Ordinal
SUGAR	Frequency of sugary food consumption (9-point scale)	Ordinal
MILK	Frequency of milk product consumption (9-point scale)	Ordinal
MEAT	Frequency of meat consumption (9-point scale)	Ordinal
NOODLES	Frequency of noodle consumption (9-point scale)	Ordinal
FASTFOOD	Frequency of fast food consumption (9-point scale)	Ordinal
Sociodemographic variables		
SEX	Sex of participants	Nominal
AGE	Age of participants	Metric
EDU	Educational level (nine categories)	Ordinal
INC	Monthly net income (eleven categories)	Ordinal

A link to the survey was shared on various social networks (e.g., Facebook and Instagram). In addition, a link was posted in various eSports-related online groups. The questionnaire was online for a total of four weeks. In total, 339 completed questionnaires were received.

Results

The following table provides information about the descriptive results of the study. In addition, a comparison is made between participants who play eSports games and those who do not play eSports based on their average questionnaire response values.

Table 2: Descriptive and bivariate results

	MEAN	STD. DEV.	MIN	MAX	eSports	Non-eSports	Significance of Differences
ESPORTS	0.71	0.456	0	1	-	-	-
HEALTH_EAT	3.43	1013	1	5	3.25	3.88	0.0000
SPORT	0.81	0.396	0	1	0.76	0.91	0.0020
KNOWHOW	1.98	0.717	1	3	2.24	1.36	0.0000
FRUITS	5.19	2.02	1	9	4.85	6.00	0.0000
VEGETABLES	5.88	1.691	1	9	5.61	6.52	0.0000
ALCOHOL	3.89	2.063	1	9	3.58	4.64	0.0000
CAFFEINE	5.97	2.223	1	9	5.59	6.91	0.0000
SUGAR	3.76	1.828	1	9	3.73	3.85	0.5049
MILK	5.57	1.826	1	9	5.49	5.76	0.1880
MEAT	6.18	1.723	1	9	6.13	6.27	0.2649
NOODLES	3.09	1.388	1	9	3.11	3.03	0.2172
FASTFOOD	5.09	1.585	1	9	5.05	5.18	0.6692
SEX	0.90	0.356	0	1	0.91	0.88	0.6956
AGE	26.43	6.763	14	51	26.77	29.09	0.0188
EDU	6.79	1.612	1	9	6.71	6.97	0.0283
INC	6.57	2.220	1	11	6.31	7.18	0.0005

The descriptive data show that primarily men answered the questionnaire. The average age of the participants is 26.5 years, and the average income is approximately 2.000-2.500 €. Overall, 71% of the participants regularly play eSports games, and 81% play sports regularly. The participants' nutritional behaviour can be described as mediocre good. The participants particularly consume meat, caffeine and vegetables. Noodles, sugary baked goods (e.g., cake) and alcohol are consumed less.

A comparison of the mean values reveals significant differences between the two groups in most categories. In summary, participants who do not play eSports games are significantly healthier, play more sports, know less about eSports games, are older, have higher incomes, and eat more fruits and vegetables but drink more caffeine and alcohol than participants who do play eSports.

Finally, the regression results are presented. Scalar measures of fit – McFadden's R^2 and McKelvey and Zavoina's R^2 – were used to compare the competing models (Hagle & Mitchell, 1992; Long, 1997; Windmeijer, 1995). The results demonstrate that the probit regression has a slightly better fit than the logit model.

Table 3: Regression results

	LOGIT	PROBIT
HEALTH_EAT	-1.510***	-0.914***
	(-3.16)	(-3.21)
SPORT	-1.683***	-0.978***
	(-3.47)	(-3.43)
KNOWHOW	5.265***	3.123***
	(8.02)	(8.53)
SEX	-0.546	-0.329
	(-1.43)	(-1.57)
AGE	0.572	0.323
	(1.23)	(1.16)
EDUC	-0.839*	-0.520*
	(-1.73)	(-1.86)
INC_	-1.036	-0.607*
	(-1.64)	(-1.65)
_cons	2.532	1.590
	(1.48)	(1.61)
N	339	339
McFadden's R^2	0.422	0.428
McKelvey and Zavoina's R^2	0.725	0.754

Standardized beta coefficients; *t* statistics in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The regressions, which included not only the sociodemographic variables but also the sports- and health-related variables in the analysis, show significant results. Table 3 shows that HEALTH_EAT, SPORT and EDU have negative impacts on the likelihood of a participant playing eSports games on a regular basis. In the second regression model, income also has a weakly significant impact on the dependent variable. By contrast, knowledge of eSports games has a highly significant positive impact on the likelihood of playing eSports games. The age and sex of the participants in both regressions have no significant influence on the dependent variable.

Conclusion

In this article, we examine differences between participants who play eSports games and participants who do not. Based on the bivariate and multivariate results, significant differences between the two groups can be identified. Therefore, playing eSports games can have a significant impact on individuals. For example, people who do not play eSports games do more sports than those who do play eSports. However, notably, the proportion of participants who actively practice sports is comparatively high, even for eSports players. This finding is consistent with the results from the study by Froböse et al. (2019). Therefore, the findings do not necessarily support the common prejudice that eSports games can crowd out active sports participation. In contrast, in line with Froböse et al. (2019), a vast majority of eSports players seem to divide their free time among different activities.

Regarding the health and nutritional aspects, the picture is more varied. On the one hand, eSports players state that they pay less attention to healthy food than non-eSports players, and this self-assessment is confirmed by their lower consumption of fruit

and vegetables. In the other product groups, such as fast foods, sugary products and even meat, however, no significant differences between the two groups are observed. In the beverage sector, eSports players consume even less alcohol and caffeine than non-eSports players. Thus, in terms of health and nutrition, both groups focus on different nutritional products of the food sector. Mean values between 3 and 7 indicate that the individual categories are consumed between 2-3 times a month to once a day. Fast food has a mean value of approximately 5 and is thus consumed 3-4 times a week.

Finally, the sociodemographic data show that eSports players are younger, have a lower education level and a slightly lower income than non-eSports players. Notably, younger people who are in the middle of their education generally have low income. Therefore, these differences are not necessarily due to the eSports group playing eSports.

In summary, the study shows that playing eSports games tends to have a negative impact on a healthy lifestyle with sports participation. However, while there are differences in nutritional habits between eSports players and non-eSports players, the two groups are very similar in some nutritional categories. Thus, these differences seem primarily due to sports-related factors. As the recently published study by the WHO (2019) showed, a lack of exercise through sports in particular seems to exert a negative influence. Consequently, future studies should focus more on sports and exercise habits in the context of eSports gaming.

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