

Original research papers

COMPETITIVE VS. RECREATIONAL SPORT: EXAMINING THE LINK TO HARMFUL ALCOHOL DRINKING IN YOUTH

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Abstract

Introduction. Sports are frequently investigated in relation to alcohol consumption habits in adolescence, but few studies have reported various competitive- and recreational-sport factors as correlates of harmful alcohol consumption in youth. This cross-sectional study aimed to identify possible associations that may exist between sports factors and harmful drinking in adolescents, emphasizing the specific influence of participation in competitive and recreational sports. **Material and Methods.** The participants were 650 adolescents from Bosnia and Herzegovina (16-17 years of age, 313 females) who were tested for sociodemographic factors, competitive-sport factors, recreational-sport factors, physical activity levels (PALs), and outcome-alcohol drinking (obtained by Alcohol Use Disorders Identification Test – AUDIT). For the purpose of statistical analyses, the obtained AUDIT score was dichotomized (non-harmful vs. harmful drinking). **Results.** Harmful drinking was more common in males than in females ($\chi^2 = 47.01$, $p < 0.001$), and those adolescents who reported better competitive success in sports ($\chi^2 = 41.81$, $p < 0.001$). The PAL was greater in those males who did not report harmful drinking (t -test = 2.45, $p < 0.05$), with no significant difference in females or in the total sample. Logistic regressions were performed with sex as a confounding factor and revealed that competitive success in sports was significantly correlated with harmful drinking (OR = 1.32, 95% CI: 1.02-1.66, $p < 0.05$). **Conclusions.** This study highlighted the specific association between competitive sports success and harmful drinking in adolescents, indicating the need for a more detailed analysis of the background of the established association. Further analyses on the potential association between PAL and substance misuse in youth are warranted.

Key words: physical activity, sports, cross-sectional studies, risk factors, adolescent

Introduction

Alcohol consumption is known to be a common social activity, especially in Europe, but it presents a significant health and social problem globally. First, and probably most importantly, excessive alcohol intake can lead to various health issues, including liver disease, heart disease, and certain types of cancer [1]. It also contributes to increased risk of accidents, violence, and mental health problems [2]. Alcohol misuse can strain relationships, disrupt family life, and lead to financial difficulties, whereas alcohol-related problems place a burden on healthcare systems [3, 4]. Not surprisingly, public health initiatives often focus on education and prevention programs to address alcohol-related harm while trying to raise awareness about the risks of alcohol consumption and promote responsible drinking habits. Additionally, factors associated with alcohol consumption are frequently investigated. The idea is to evaluate various social, demographic, and psychological factors associated with alcohol consumption to identify those that are positively and negatively related to alcohol consumption [5, 6].

Adolescence is a particularly vulnerable period for the detrimental effects of alcohol. Early alcohol consumption can disrupt this development, leading to cognitive impairment and an increased risk of alcohol dependence later in life. Adolescent drinking is often associated with risky behaviors such as drunk driving, unprotected sex, and violence. Furthermore, it can contribute to mental health issues such as depression and anxiety [7]. Social pressures and the desire to fit in often contri-

bute to adolescent alcohol use. Early intervention and prevention programs are crucial in addressing this problem. Parents, schools, and communities play a vital role in educating young people about the dangers of alcohol. Open communication and positive role modeling can help deter adolescents from harmful drinking patterns. Creating opportunities for healthy social interaction and coping mechanisms can further protect against alcohol misuse. By addressing this problem in adolescence, the likelihood of long-term health and social consequences could be reduced [8, 9]. In doing so, sport participation is considered a potentially valuable tool.

Sport participation is associated with numerous benefits, such as better cardiovascular health, weight management, improved overall fitness, metabolism and quality of sleep, and various mental and health benefits [10, 11, 12]. Importantly, participating in sports teaches discipline, perseverance, and the ability to set and achieve goals, whereas sports can help develop resilience, the ability to bounce back from setbacks and challenges. Together, these findings lead to the overall perception that engaging in sports can reduce the risk of substance abuse, including alcohol consumption. Indeed, sport participation is significantly associated with better quality of life, promoting a healthier, happier, and more fulfilling lifestyle, which could lead to a lower likelihood of substance misuse, including alcohol consumption [13]. However, the association between sport participation and alcohol consumption likelihood is not straightforward, particularly in adolescents.

While some studies suggest that formal sport participation may protect against alcohol use, others indicate a greater likelihood of alcohol drinking in athletic individuals [14, 15]. When various sports factors were observed (participation in individual sports vs. team sports, competitive sport, competitive results, and sports experience), studies noted a protective effect of some sports factors (e.g., participation in individual sports), whereas other factors (i.e., experience in sports and participation in team sports) were associated with a greater likelihood of substance misuse, including alcohol consumption [5, 16]. Longitudinal studies generally show increased alcohol use among sport participants [17]. However, the relationship is complex and influenced by factors such as gender, race, and sport type. In general, the findings suggest that complex interactions are influenced by cultural, psychological, and social dynamics.

Alcohol consumption is known to be a serious public health problem in Bosnia and Herzegovina [18, 19, 20]. What is particularly disturbing is the fact that the official European School Survey Project on Alcohol and Other Drugs highlights the high prevalence of adolescent drinking in the country [21]. Public health and educational authorities in the country strongly support and encourage the sport participation of youth. In doing so, sport is regularly proclaimed as pro-social behavior, which could be preventive against substance misuse, including alcohol consumption. Studies conducted in the country territory over the last decade have revealed certain specific associations between sport participation and alcohol consumption, indicating that quitting sports is a risk factor for harmful alcohol consumption and a lower likelihood of alcohol drinking in adolescents aged 14 years who are actively involved in sports [22, 23]. However, studies conducted thus far have examined participation in competitive sports only, whereas participation in non-competitive (recreational) sports has not been included in the analyses. This would be particularly important given that an increasing number of adolescents are involved in recreational sports.

From the previous literature overview, it is clear that the association between sport participation and alcohol consumption in adolescence is complex and deserves further investigation and a more accurate elaboration of potential mechanisms of influence [22, 23]. Additionally, it is clear that different types of sport participation and various sports factors should be specifically investigated with respect to their potential associations with alcohol consumption. Interestingly, few studies have investigated the association between recreational (e.g., non-competitive) sport participation (recreational physical exercise) and alcohol misuse in adolescents. While this type of sport participation has become increasingly popular among adolescents in recent decades, we believe that it deserves special attention with respect to its eventual correlation with alcohol consumption.

This study aimed to evaluate possible associations that may exist between various sports factors and alcohol consumption patterns in adolescents aged 16-17 years, emphasizing the differences in the associations between (i) participation in recreational sports and (ii) participation in competitive sports with harmful alcohol drinking. Additionally, we observed physical activity levels as a potential correlate of harmful alcohol drinking. We were specifically interested in studying adolescents aged 16-17 years for two important reasons. First, current laws in Bosnia and Herzegovina prohibit adolescents younger than 16 years from being out of their homes unattended later than 23:00 hours. From this perspective, youth aged 16-17 years are at particular risk of harmful alcohol drinking. Second, recent reports highlighted the age of 15-16 years as the age at which

significant drop-out from competitive sports occurs, whereas adolescents of that age begin recreational exercise in gyms and fitness centers [24]. Therefore, studying adolescents aged 16-17 years could be important in defining the differences between competitive- and recreation-sport participation with respect to alcohol consumption. Initially, we hypothesized that the studied sports factors would be differentially associated with harmful drinking, with (i) competitive sport factors being risk factors and (ii) recreational sport factors being protective factors for harmful drinking in the studied adolescents.

Material and Methods

Participants and design of the study

This study enrolled 650 participants (313 females). All the participants were involved in a regular school system and were students of high schools from Herzegovina-Neretva County and Western Herzegovina County, which are located in southern Bosnia and Herzegovina. The sampling procedure consisted of several phases. First, 50% of the high schools in the territory of the two cantons were randomly selected. One of the investigators then visited the schools and explained the full procedure and study aims to all the participants and to at least one parent per participant. This was done during regular school meetings organized at the beginning of the school year. Informed consent was obtained from parents since all the children were underage. One to two weeks later, the test was performed. The schools of interest were mostly organized in two shifts (morning and afternoon), and we decided to perform the testing of each school in one week during the afternoon shift, meaning that only those children (classes) who were in school at that particular moment were tested. The survey for each class was administered on a single day. The response rate was greater than 95%. To ensure anonymity, no identifying information was collected from the participants. The survey utilized multiple-choice answers where applicable (please see later for the variables). The participants were informed that the study was completely anonymous and voluntary and that they could skip any questions or withdraw from the study at any time. The study adhered to all relevant ethical guidelines and received approval from the Institutional Review Board of the corresponding author's institution.

Variables and testing

Surveys were performed via an extensive self-administered questionnaire, which was previously applied and found to be valid in similar samples in Bosnia and Herzegovina and surrounding countries [5, 22, 23]. The data included sociodemographic data, sports factors, physical activity level (i.e., independent variables), and alcohol consumption measured with the Alcohol Use Disorders Identification Test (AUDIT) questionnaire (i.e., dependent variable – outcome).

Sociodemographic data included age and sex. We assessed individual and team sport participation separately, the amount of time subjects spent engaging in individual and team sports (both questions were answered on a scale consisting of never, yes but quit, and yes, currently participating), the length of their involvement in sport (< 1 year, 1-3 years, > 3 years), and their competitive sports achievements (never participated/competed; local competitions/success; national competitions/success; international competitions/success). Furthermore, we evidenced participation in recreational sports through three questions, namely, do you participate in some form of recreational sports activity? (Never; Yes, but quit; Yes, currently participating). How often? (Sporadically; Once-twice per week; 3 times per week;

> 3 times per week; No participation), Intensity of the recreational sports activity? (Light; Moderate, Moderate-to-high; High intensity; No participation). Physical activity level was evaluated with the Physical Activity Questionnaire for Adolescents (PAQ-A), a widely used, self-report tool designed to assess general physical activity levels in adolescents aged 14-19 years [25]. This questionnaire asks participants to recall their activity levels over the past seven days across various settings, such as school and free time [26]. The PAQ-A has demonstrated good reliability and validity in numerous studies, making it a practical choice for researchers [26, 27, 28]. Alcohol consumption was measured via the AUDIT questionnaire, which contains 10 items with scores ranging from 0 to 4 for a hypothetical minimum (0) to maximum (40) range [29, 30]. The overall results of the AUDIT were divided into “harmful drinking” (HD) and “non-harmful drinking” (NHD). While the literature suggests two types of dividing scores into HD and NHD (i.e., by using scores of 8 and 11 as “cut-off point”), we used a total score of 11 as a cut-off score for HD [16].

The survey was strictly anonymous and was administered to groups of at least 15 respondents. The response rate was greater than 99%. The study was approved by the Ethics Committee of Faculty of Kinesiology, University of Split, Croatia (EBO: 2181-205-05-02-05-14-005, 11 May 2017), and the procedures presented were in accordance with the ethical standards regarding experiments specified in the Declaration of Helsinki.

Statistics

After the normality of the distributions was checked via the Kolmogorov-Smirnov test, descriptive statistics included means and standard deviations (for age and raw AUDIT score) and frequencies and percentages (for remaining variables). In the second phase, we established the associations between the studied sociodemographic and sports factors and alcohol consumption prevalence. For this purpose, we grouped participants into two groups: those who reported harmful drinking practices (HDs) and those who did not report such practices according to the AUDIT scale (NHD). Independent samples *t* tests were used to identify differences in the PAQ-A score, whereas the chi-square test (χ^2) was used to determine the differences in nonparametric variables between the HD and NHD groups. Finally, a set of univariate logistic regressions was performed to establish the associations between PAQ-A and sports factors (predictors) and harmful drinking practices. Since analyses of differences between HDs and NHDs revealed significant differences for sex (please see Results later for details), all logistic regressions included sex as a covariate (confounding factor). The odds ratio (OR) and 95% confidence interval (95% CI) were reported, and the Hosmer–Lemeshow test was used to check the model fit.

Statistica ver 13.5 (Tibco Inc., Palo Alto, CA, USA) was used for all analyses, and a *p*-level of 95% was applied.

Results

Table 1 presents the results of the descriptive statistics for the total sample and separately for groups formed on the basis of the prevalence of harmful drinking. Additionally, the results of the chi-square test differentiating HD and NHD on nonparametric variables are presented. In brief, harmful drinking practices were more prevalent in males ($\chi^2 = 47.01$, $p < 0.001$), participants who quit team sports ($\chi^2 = 10.01$, $p < 0.01$), and participants who achieved better results in competitive sports ($\chi^2 = 41.81$; $p < 0.001$).

Figure 1 presents the descriptive statistics and differences in the PAQ-A scores between HD and NHD groups. For the to-

tal sample (Fig. 1A), no significant difference was found in the PAQ-A score between the groups (*t*-test = 1.02, $p = 0.30$). Additionally, when observed specifically for females (Figure 1C), no significant difference was found between HD and NHD groups (*t*-test = 0.47, $p = 0.63$). However, PAQ-A values were greater in NHD than in HD when analyses were performed specifically for males (Figure 1B; *t*-test = 2.45, $p < 0.05$).

The results of the logistic regressions are presented in Table 2. Evidently, the only significant predictor of HD is competitive sport achievement (OR = 1.32, 95% CI: 1.02-1.66, $p < 0.05$), with a 32% greater likelihood of HD in those adolescents who achieved better sports success, with the Hosmer–Lemeshow test indicating appropriate model fit (Chi-square = 0.01, $p > 0.05$). Importantly, factors related to recreational sport participation were not significantly correlated with HD.

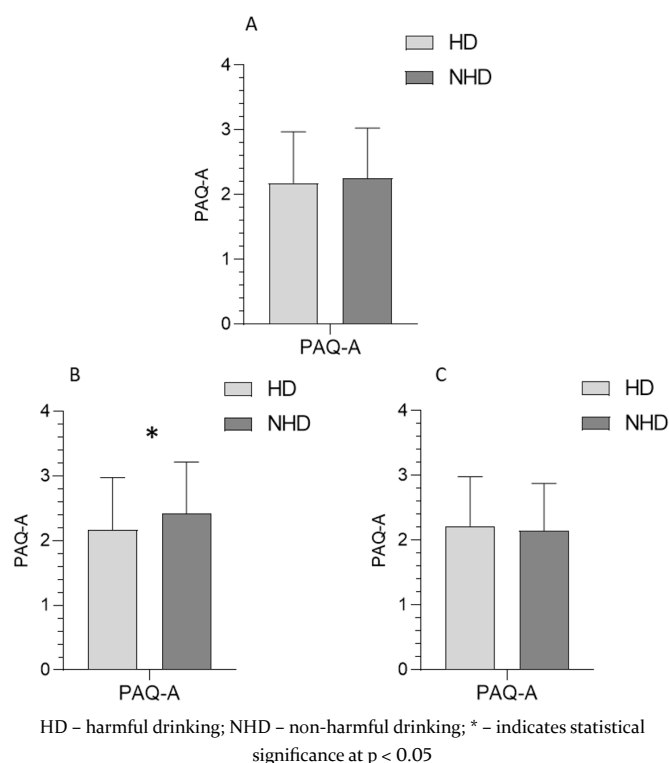


Figure 1. Descriptive statistics (means $\pm$ standard deviations) for physical activity levels obtained with the Physical Activity Questionnaire for Adolescents (PAQ-A) with differences between groups for the total sample (1A), in males (1B), and in females (1C).

Table 2. Associations between physical activity levels and sports factors and the outcome of harmful alcohol consumption in adolescents.

	OR	95%CI	p-level
Physical activity levels (PAQ-A)	0.77	0.58-1.01	0.06
Individual sport participation	0.95	0.71-1.25	0.67
Team sport participation	0.95	0.70-1.29	0.74
Experience in competitive sports	0.99	0.85-1.16	0.96
Competitive achievement in sports	1.32	1.02-1.66	0.03
Recreational sport participation	1.17	0.91-1.51	0.22
Intensity of the recreational sport	0.98	0.69-1.42	0.95
Frequency of the recreational sport	1.14	0.79-1.58	0.54

OR – odds ratio; 95% CI – 95% confidence interval; all calculations were adjusted for sex.

Table 1. Descriptive statistics and differences between groups on the basis of harmful drinking prevalence (Chi-square – χ^2)

	Total		Non-harmful drinking		Harmful drinking		χ^2	p-level
	F	%	F	%	F	%		
Gender							47.01	0.001
Female	313	48.15	221	41.70	92	76.67		
Male	337	51.85	309	58.30	28	23.33		
Missing	0	0.00	0	0.00	0	0.00		
Individual sport participation							4.46	0.100
Yes, still participating	85	13.08	70	13.21	15	12.50		
Quit	239	36.77	185	34.91	54	45.00		
No, never	326	50.15	275	51.89	51	42.50		
Missing	0	0.00	0	0.00	0	0.00		
Team sport							10.01	0.006
Yes, still participating	103	15.85	85	16.04	18	15.00		
Quit	321	49.38	251	47.36	70	58.33		
No, never	226	34.77	194	36.60	32	26.67		
Missing	0	0.00	0	0.00	0	0.00		
Experience in competitive sports							7.39	0.070
Never participated	176	27.08	152	28.68	24	20.00		
< 1 year	113	17.38	86	16.23	27	22.50		
1-3 years	209	32.15	175	33.02	34	28.33		
> 3 years	150	23.08	116	21.89	34	28.33		
Missing	1	0.15	0	0.00	1	0.83		
Competitive achievement in sports							41.81	0.001
Never participated/never competed	310	47.69	262	49.43	48	40.00		
Local competitions/success	204	31.38	179	33.77	25	20.83		
National competitions/success	99	15.23	58	10.94	41	34.17		
International competitions/success	37	5.69	31	5.85	6	5.00		
Missing	0	0.00	0	0.00	0	0.00		
Recreational sport participation							1.49	0.47
Yes, currently	169	26.00	143	26.98	26	21.66		
Quit	184	28.30	149	28.11	35	29.16		
No, never	297	45.69	238	44.90	59	49.16		
Missing	0	0.00	0	0.00	0	0.00		
Intensity of the recreational sport							5.36	0.140
Light	70	10.77	59	11.13	11	9.17		
Moderate	181	27.85	149	28.11	32	26.67		
Moderate-to-high	79	12.15	70	13.21	9	7.50		
High	18	2.77	12	2.26	6	5.00		
Missing (including those who never participated)	302	46.46	240	45.28	62	51.67		
Frequency of the recreational sport							1.41	0.700
Sporadically	90	13.85	78	14.72	12	10.00		
Once-twice per week	165	25.38	137	25.85	28	23.33		
Three times per week	74	11.38	59	11.13	15	12.50		
> 3 times per week	18	2.77	15	2.83	3	2.50		
Missing (including those who never participated)	303	46.62	241	45.47	62	51.67		

F – frequencies, % – percentages.

Discussion

With respect to the study aims, several important findings exist. First, there is generally a poor association between sports factors and HD in adolescents, but competitive achievement in sports was significantly correlated with HD, indicating a higher prevalence of HD in those adolescents who had better achievements in competitive sports. Second, we found no significant association between observed recreational-sport factors and HD. Therefore, our initial study hypothesis can be partially accepted.

As mentioned in the introduction, sport is often considered preventive against alcohol consumption in adolescence. There are various mechanisms that could contribute to such effects. First, there is no doubt that engagement in sports provides a constructive and engaging way to spend time. This can reduce boredom and unstructured time, both of which can contribute to experimenting with alcohol. Second, sport society can foster a sense of belonging and positive peer influence. If team culture emphasizes healthy behaviors and discourages alcohol use, it can have a powerful effect on individual choices. Sport participation, regular practice, games and competitions can help adolescents develop discipline and self-regulation, which may extend to making responsible decisions about alcohol. Additionally, youth athletes are generally more aware of their physical health and the importance of taking care of their bodies. This awareness can make them more hesitant to engage in behaviors, while alcohol can harm their athletic performance [31, 32]. Indeed, some studies have confirmed that alcohol consumption is not prevalent in athletic adolescents, supporting theories that sport participation is protective against alcohol consumption in youth [19]. From this perspective, our finding of a nonsignificant correlation between sport factors and alcohol consumption may seem surprising.

However, in contrast to theories on the protective effect of sports, there are considerations of participation in sports as a risk factor for alcohol consumption in adolescence. For example, sports often involve team bonding and social events where alcohol may be present, increasing the likelihood of exposure and consumption. This is particularly the problem in some sports that may have a culture that encourages or normalizes alcohol use, for example, in celebratory settings [33]. Another important problem is risk-taking behavior itself, which is prevalent, even welcomed, in competitive sports. Therefore, adolescents involved in competitive sports may be more prone to risk-taking behaviors in general, which could be logically translated into substance misuse, including alcohol consumption [32]. Competitive sports put great pressure on (young) athletes; therefore, athletes may use alcohol to cope with performance pressure or the stress of competition. Finally, athletes may mature physically earlier, leading to earlier exposure to social situations where alcohol is present, whereas in some sports, adolescents may interact with older athletes who model or encourage alcohol use [34]. Not surprisingly, for each study in which the authors identified a certain protective effect of sports against alcohol consumption, there was another study in which sport participation was shown to be a risk factor for adolescent alcohol consumption [35].

Collectively, while many factors suggest that sport participation should deter alcohol consumption, it is clear that the influence of sport participation can even be opposite [32]. Ultimately, the impact of sport on alcohol use likely depends on a complex interplay of individual athlete characteristics, the specific sport culture, coaching styles, and the broader social context. Therefore, a generally nonsignificant overall correla-

tion is plausible when these opposing influences effectively cancel each other out.

Despite the generally poor associations between the studied sports factors and alcohol consumption, competitive success in sports was significantly associated with alcohol consumption, indicating a higher risk for harmful drinking in adolescents who achieved better competitive success in sports. In explaining this correlation, one specific context should be presented. Specifically, in the region where the study was conducted (i.e., southeastern Europe, the territory of former Yugoslavia in particular), alcohol advertising and sponsorship in sports are common, which can significantly influence young people's attitudes toward drinking. The use of attractive imagery, celebrity endorsements, and associations with popular events creates a perception of alcohol as glamorous, desirable, and socially acceptable. Youths are especially vulnerable to these marketing tactics, as they are still developing their decision-making skills and are highly influenced by their peers and role models. Such exposure to alcohol advertising can normalize drinking and increase the likelihood that young people will initiate alcohol use at an earlier age or consume alcohol in greater quantities [19, 36].

The question that arises is why, of all the studied sports factors, competitive achievement was the only factor directly connected to a higher likelihood of drinking. Although in this study we did not specifically examine the background of sports success, we can still provide some theoretical explanations. First, athletes who achieve significant competitive success often experience heightened pressure to perform, manage stress, and maintain their status [37]. This pressure, coupled with the "work hard, play hard" mentality prevalent in some competitive environments, could lead youth athletes to use alcohol as a coping mechanism or a way to celebrate victories. Moreover, high-achieving youth athletes might be more likely to be invited to social events where alcohol is present [33]. This naturally increases their exposure and opportunities for drinking. Additionally, winning teams might have established traditions or celebrations that involve alcohol, further normalizing its use among high achievers. In connection with the previous discussion, it is also possible that individuals who are naturally more risk-taking or sensation-seeking are drawn to both competitive achievement and alcohol use [38]. Finally, while the authors of the study are aware of the situation in the country, we must highlight that sponsorship by alcohol companies is more common in more successful teams, further strengthening the link between competitive achievement and alcohol exposure.

Initially, we hypothesized that recreational sports would have protective effects on HD in youth, but no significant correlation was found between recreational sports factors and HD. While this is one of the first studies in which this problem was investigated, we included only the basic variables to compare competitive and recreational sport relative to its correlation with HD. However, once again, given the situation in the country, the issue of "social acceptance" of alcohol drinking should be presented and discussed when our findings are explained. If drinking is widely accepted and normalized within a society, particularly among young people, then any factor (even recreational sport participation) would be less likely to be correlated with alcohol consumption. In other words, the influence of broader social norms around alcohol may overshadow any potential protective effects of recreational sport. This is additionally aggravated by so-called "background influence". Specifically, high social acceptance creates a strong "background" level of alcohol consumption that might make it difficult to detect the specific impact of recreational sports [39]. Therefore, even if recreatio-

nal sport does offer some protective benefits (such as providing a healthy alternative activity), these effects might be weakened or neutralized if the overall culture strongly encourages or tolerates drinking.

Of course, one could argue that it is questionable whether the studied country is “tolerant” to alcohol drinking, which is particularly logical criticism given that a significant proportion of the populations in Bosnia and Herzegovina are religious Muslims. However, we must highlight that we observed counties where the majority of the population are Croats, who are religiously Roman Catholics. Additionally, a recent European School Survey Project on Alcohol and Other Drugs (ESPAD) reported that Bosnia and Herzegovina are among the top 10% of European countries in regard to alcohol consumption in adolescents [21]. Therefore, the social acceptance of alcohol drinking is actually the case for the studied sample of participants.

Cross-sectional studies, such as this one, face limitations in determining causality. Because data on both the exposure (e.g., sport participation) and outcome (e.g., alcohol use) are collected at a single point in time, establishing the temporal sequence of events is impossible. Therefore, we cannot definitively say whether one factor caused the other or if a third, unmeasured factor influenced both, or even if the assumed outcome actually preceded the assumed exposure (reverse causality). Therefore, further longitudinal studies on this problem are warranted. The second limitation is the sample we studied, which originated from specific regions in one country. There is no doubt that the characteristics and experiences of individuals within that region may not be representative of the broader population due to local cultural norms, socioeconomic factors, or other unique regional influences. On the other hand, a key strength of this research lies in its comprehensive assessment of various sports factors, including both competitive and recreational aspects. By examining multiple dimensions of sport participation, such as the type of sport, frequency, and competitive achievement, this study provides a more nuanced understanding of the complex relationship between sport and alcohol use. This detailed approach allows for a finer-grained analysis, revealing that specific aspects of sports involvement, such as competitive achievement, may be associated with alcohol use, whereas others are not.

Conclusions

This study investigated the association between sport participation and alcohol consumption in adolescents, revealing a complex interplay of factors. While sport is often touted as a protective influence against alcohol use, our findings indicate a generally poor association between various sports factors and drinking behaviors. This suggests that the positive effects of sports, such as promoting healthy habits and providing structure, can be counterbalanced by negative influences such as peer pressure, the “work hard, play hard” mentality, and exposure to alcohol through sponsorships and social events. Therefore, the overall impact of sports on alcohol use appears to depend on multifaceted interactions among individual, team, and societal factors.

A notable exception to the overall nonsignificant findings was the positive correlation between competitive sport achievement and alcohol consumption. These findings suggest that adolescents who excel in competitive sports may be at a greater risk of harmful drinking. The heightened pressure to perform, increased exposure to social events involving alcohol, and the potential influence of alcohol industry sponsorships in elite sports likely contribute to this increased risk. These sports fac-

tors may also be aggravated by the problem of the general social acceptance of drinking that is present in the country where the study was conducted.

In conclusion, while recreational sport participation did not demonstrate a significant association with alcohol consumption in this study, the findings highlight the importance of considering the broader context, particularly the influence of cultural norms. The strong social acceptance of alcohol in the study region likely overshadowed any potential protective effects of recreational sport. Future research should further explore these nuances, examining specific sport cultures, the role of coaches and peers, and the impact of alcohol marketing within the sport setting to develop more effective prevention strategies for adolescent alcohol misuse.

While there is no general association between physical activity level obtained via questionnaire and HD, the established gender-specific results, with lower physical activity levels in males who did not report HD, could point to a specific background of such an association and highlight a more detailed analysis of the association that may exist between physical activity levels and HD in youth.

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Submitted: January 5, 2025

Accepted: January 14, 2025