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Original article

Differences in Personality Traits and Emotional Intelligence of Athletes and Non-Athletes: The Role of Gender and Performance Level

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Abstract

The increasing interest in the psychological impact of sports engagement has led to growing scientific efforts to understand whether athletes exhibit distinct psychological profiles compared to non-athletes. This study investigates differences in personality traits and emotional intelligence (examined both as a trait and as an ability) between athletes and non-athletes, with a particular focus on the role of gender and level of sports achievement. A total of 481 participants from Bosnia and Herzegovina took part in the study, including 277 athletes (58%) from 16 different sports and 204 non-athletes (42%). The sample comprised 260 males (163 athletes, 97 non-athletes) and 221 females (114 female athletes, 107 female non-athletes). Four validated instruments were employed to assess psychological traits: The Big Five Inventory (BFI), the Situational Test of Emotional Understanding (STEU), the Situational Test of Emotional Management (STEM), and the Emotional Skills and Competence Questionnaire (ESCQ). The results revealed that athletes score significantly higher in conscientiousness and extraversion and demonstrate better emotional management skills compared to non-athletes. However, they also exhibit lower openness to new experiences. These differences are more evident among male participants. No statistically significant differences were found between athletes of different performance levels (e.g., elite vs. recreational), suggesting that the mere involvement in sport, regardless of competitive level, may be linked to specific psychological traits. These findings underscore the importance of considering sport participation as a factor influencing personal development, particularly in relation to personality structure and emotional competence. However, the cross-sectional nature of the study limits causal interpretations. Therefore, future research should employ longitudinal designs and integrate sport-specific psychological assessments, while also considering socio-cultural contexts that may shape both sport experience and psychological functioning. Although additional investigation is necessary, the results are encouraging, indicating that sport practice may have positive effects on the development of enduring psychological characteristics, such as personality traits and emotional competence.

Keywords: emotional competence, Big Five, sports performance, diverse sports

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Introduction

Research on the relationship between sports activities and psychological phenomena has a long tradition, with various psychological constructs being linked to (in)activity in sport and athletic success. This paper focuses on two constructs that are particularly relevant in the sports context: personality traits and emotional intelligence. Over the past 80 years, interest in personality in sport has gone through phases of intense research, neglect, and renewed attention (Allen et al., 2013). The most prevalent psychological framework in this field is trait theory, which defines traits as relatively stable characteristics of an individual that shape patterns of behavior, thinking, and emotions (Kassin, 2003). Factor analysis enabled the simplification of numerous identified traits, leading to the development of the dominant Big Five model (Goldberg, 1990), which identifies five major factors: extraversion, agreeableness, conscientiousness, neuroticism, and openness to new experiences. The application of the Big Five model in sports has taken various directions, linking personality traits with goal orientation (Wang & Erdheim, 2007), coping strategies (Allen et al., 2011; Kaiseler et al., 2012), burnout syndrome (Li et al., 2018), mental skills (Fabbricatore et al., 2023), emotional stability, and reasoning (Klatt et al., 2021). Additionally, some attention has been given to understanding the relationship between personality traits and athletic success. Research shows that higher-level athletes tend to exhibit greater conscientiousness and lower neuroticism (Piedmont et al., 1999), as well as varying levels of agreeableness (Allen et al., 2011; Steca et al., 2018), extraversion, agreeableness, and conscientiousness (Siemon & Wessels, 2022). Review studies confirm the predictive value of the Big Five, emphasizing that, aside from neuroticism, all other traits positively correlate with athletic success (Allen et al., 2013; Piepiora et al., 2024; Shuai et al., 2023).

Personality traits have also been linked to sports (in)activity. A review study indicates that athletes are generally more extraverted, emotionally stable, and open to new experiences compared to non-athletes (Allen et al., 2013). However, other research has found that athletes score higher on all Big Five dimensions except for openness to new experiences (Steca et al., 2018). The examination of gender effects on the relationship between personality traits and sport (in)activity has mostly been of an intra-group nature, with general conclusions indicating that results found in the non-athlete population are mirrored in the athlete population, given that differences between men and women were established in both cases (Allen et al., 2011, 2013). However, a question that has remained in the background of previous research, but which deserves deeper analysis, involves understanding the differences between male non-athletes and athletes, and analogously among females. A few studies indicate the existence of such differences, emphasizing that male athletes are more conscientious than male non-athletes (Malinauskas et al., 2014), and that elite athletes display higher levels across all personality traits except openness (Steca et al., 2018). Even more scarce are findings about differences between female athletes and non-athletes. One study in the domain of martial arts found that female athletes exhibited lower levels of emotional reactivity, though it should be noted that this study was not based on the Big Five model (Burdzicka-Wołowik & Góral, 2014). Given the plurality of theoretical approaches, the variety of instruments applied, and the wide research potential of the personality trait construct, it is not surprising that experts today describe it as an "ever-present research direction" in sport (Piepiora et al., 2024). In addition to arguments supporting the need for further investigation of the link between personality traits and sport, researchers also point out several shortcomings of previous studies. These include small sample sizes per study (a minimum of 40 participants, with most studies not exceeding 200), excessive heterogeneity, limitations to one sport without consideration of categorizing athletes by skill level (Steca et al., 2018), and the lack of studies addressing the socio-cultural context (Shuai et al., 2023).

Sports activities are rich in complex socio-psychological dynamics that generate intricate affective states, which is why experts emphasize that emotions are essential aspects of sporting activities (Vallerand & Blanchard, 2000) and deserve special attention. Accordingly, the construct of emotional intelligence (EI), which represents an individual's ability to recognize and effectively manage emotions to achieve personal and social well-being (Mayer et al., 2008), has attracted researchers' attention in the sports domain. Naturally, the

interest was focused on understanding the relationship between EI and sports success, with analyses confirming statistically significant correlations indicating that higher-level athletes exhibit greater emotional intelligence (Kopp & Jekauc, 2018; Laborde et al., 2016; Merino Fernández et al., 2022; Montenegro-Bonilla et al., 2024), and also that athletes with higher emotional intelligence achieve better results on ability tests or in actual competitions (Gatsis et al., 2021; Haryanto et al., 2024). Studies also focused on the link between EI and participation in sports or physical exercise, with results generally confirming that individuals who engage in sports or are more physically active possess higher levels of EI (Bostani & Saiiari, 2011; Lepir et al., 2018; Ubago-Jiménez et al., 2019). One explanation is that EI is a good precondition for developing self-regulated learning (planning, self-monitoring, effort, and self-confidence), which ultimately serves as a significant predictor of greater involvement in activities that are generally beneficial for the individual, such as physical exercise (Cecchini et al., 2019). When it comes to gender effects, studies of the general population usually indicate higher levels of EI in women (Extremera et al., 2006; Kafetsios, 2004), while results in sports samples are more contradictory, ranging from higher EI in men or in women, to no observed differences at all (Merino Fernández et al., 2019; Mon-López et al., 2023; Popovych et al., 2024; Rodriguez-Romo et al., 2021). The inconsistency of these findings, along with the pronounced neglect in understanding differences between physically active and inactive men and women, calls researchers to devote more thorough attention to these relationships. The examination of EI, both within and outside the context of sports, also raises the issue of its conceptualization and operationalization. One group of researchers views EI as a personality trait and accordingly uses self-report questionnaires for its assessment, while another group considers it an ability that should be measured using performance-based tests (Laborde et al., 2016). The same authors also point to the dominance of the former approach in the field of sports, indicating the need for integrating both approaches in future research. In addition to the unresolved effects of sociodemographic characteristics and methodological limitations related to operationalization, experts also cite other arguments supporting the continued investigation of EI in the sports context – such as the overrepresentation of student populations in existing studies (Ubago-Jiménez et al., 2019).

Based on recommendations from previous studies regarding the need for further exploration of these constructs in sports, the aim of this paper is to examine differences between non-athletes and athletes across the entire sample, as well as within male and female subgroups, and to assess differences among athletes of varying performance levels in terms of personality traits (using the Big Five model) and emotional intelligence (using a dual conceptualization approach: EI as a trait and as an ability). It is expected that athletes will show higher conscientiousness, emotional stability, extraversion, and emotional intelligence than non-athletes. Regarding gender, it is anticipated that both male and female athletes will demonstrate stronger adaptive and weaker maladaptive traits, as well as higher emotional intelligence compared to their non-athlete counterparts, and similar pattern is anticipated between higher and lower performing athletes. Acknowledging the methodological challenges of previous studies, and in addition to emphasizing the specificities in the application of conceptualizations and operationalizations of these constructs, this study, by including a culturally specific, relatively larger, and sport-type diverse sample of participants from Bosnia and Herzegovina, aims to contribute to clarifying insufficiently explored aspects of this issue.

Methods

Participants and Procedure

The study included 481 participants, comprising 277 athletes (58%) from 16 different sports and 204 non-athletes (42%). The sample included 260 male participants (54%), of whom 163 were athletes (92 from team sports and 71 from individual sports) with an average age of 22.2 ± 5.9 years and 11.5 ± 5.7 years of sporting experience, and 97 were non-athletes with an average age of 20.4 ± 3.4 years. The female sample consisted of 114 athletes (52%) with an average age of 20.61 ± 5.5 years and 9.5 ± 5 years of sporting experience (78 from team sports and 36 from individual sports), and 107 non-athletes with an average age of 19 ± 3.6 years. To be classified as an athlete, participants were required to have at least two years of active sports

participation and to regularly compete at a minimum of the regional level. In addition to the non-athlete category, three categories of athletic achievement were created based on the participants' current level of competition: low (n = 84), medium (n = 97), and high achievement (n = 96). This sample size was found to be adequate for conducting ANOVA with post hoc Bonferroni corrections for four participant groups, assuming a medium effect size (Cohen's f = 0.25). A power analysis conducted using G*Power software (Faul et al., 2007) indicated a statistical power of 0.98, exceeding the recommended threshold of 0.80 for detecting significant effects (α = .005 after Bonferroni correction).

Creating unified categories of sport expertise based on objective competitive achievement is a highly challenging task, especially when working with a diverse sample of athletes from various sports, genders, and age groups. To address this challenge, team sport athletes were first categorized based on the following criteria: those competing at the regional level (entity levels of Republic of Srpska and the Federation of BiH) were classified as low-level athletes; those competing in the first league of BiH were placed in the medium category; and athletes from clubs that were current national champions and competing at European international competitions were placed in the high category. For individual sports, a three-level categorization of performance was conducted using an expert method. The experts were individuals holding a doctoral degree in sport sciences and with at least ten years of coaching experience at the national or international level in the respective sport. They developed precise classification criteria for each individual sport. For example, in karate, individuals whose highest achievement was participation in national championships were categorized at the lowest level; national champions and participants in Balkan Championships, Mediterranean Games, Universiade, and the World Premier League were classified as medium level; while those ranked among the top 8 at European Championships, top 16 at World Championships, and top 3 at Balkan or Mediterranean Championships were placed in the high-level category.

The data collection process was carried out across various locations in Bosnia and Herzegovina using the selected instruments. Athletes were invited to participate through sports organizations such as clubs, federations, and sporting events, as well as through educational institutions, including secondary schools and universities. Before taking part in the study, all participants were thoroughly briefed on its purpose and signed a consent form, with parental or guardian consent obtained for underage athletes. The data collection was conducted anonymously, and the presence of the researcher ensured equal conditions for all participants, facilitated the completion of the instruments, and minimized any potential negative influence from coaches or other officials within the clubs. Ethical approval was obtained from the Faculty Ethics Committee (approval no. 11/1.624-2/25). The study was conducted in accordance with the Declaration of Helsinki.

Instruments

Big Five Inventory – BFI (John et al., 1991) is a self-report instrument for assessing personality traits based on the Big Five model. The instrument includes 44 items measuring five personality dimensions: conscientiousness, extraversion, neuroticism, agreeableness, and openness to experience. For each item, participants evaluate how characteristic the given statement or specific behavior is for them using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) (example: “I see myself as someone who does a thorough job”). The BFI has shown good internal consistency (α = .70–.85), acceptable construct validity, with confirmatory factor analyses supporting the five-factor structure (CFI ≈ .90), and convergent validity demonstrated through strong correlations with the NEO-FFI and other measures of personality (John & Srivastava, 1999). For this sample, the following alpha coefficients were obtained: conscientiousness .81, extraversion .80, neuroticism .71, agreeableness .72, and openness to experience .79.

The Emotional Skills and Competence Questionnaire – ESCQ45 (Takšić, 2002) is designed for the self-assessment of emotional competence. It is based on the Mayer and Salovey (1997) model and measures three key aspects of emotional intelligence: perceiving and understanding emotions (PUE), expressing and

labelling emotions (ELE), and managing and regulating emotions (MRE). It consists of 45 items, with participants rating their level of agreement with each statement on a five-point Likert scale, where 1 indicates "never" and 5 "always" (example: “I can almost always describe my feelings and emotions in words”). The ESCQ45 has demonstrated good internal consistency (α = .78–.89) and construct validity, with confirmatory factor analysis supporting the three-factor model (CFI = .91; RMSEA = .06), and convergent validity confirmed through positive correlations with the EQ-i and other measures of emotional competence (Takšić et al., 2009). For this sample, the following alpha coefficients were obtained: PUE (α = .83), ELE (α = .79), and MRE (α = .78).

Situational Test of Emotional Understanding – STEU (MacCann & Roberts, 2008). This test consists of 42 scenarios, and participants are asked to determine which of the five offered emotions is most likely to be experienced by a person in a given situation (example: “Something unpleasant is happening. Neither the person involved, nor anyone else can make it stop. The person involved is most likely to feel: a) Guilty, b) Distressed, c) Sad, d) Scared, e) Angry”). Each scenario has only one correct answer, determined through the target method, i.e., the authors defined the correct emotion (MacCann et al., 2004). Scoring is based on a mode system, meaning that the correct answer receives one point, while all others receive zero. STEU has been shown to have acceptable reliability (Cronbach’s α ≈ .71 in the original version), good convergent validity with MSCEIT - Understanding branch, vocabulary, personality traits, and emotional-/stress-related outcomes, and independence from trait EI, and discriminant validity indicated by low correlations with other EI components and intelligence (Austin, 2010; MacCann & Roberts, 2008). Following the authors’ guidelines (see MacCann et al., 2011), five items with zero or negative correlations with the corrected total score were removed, reducing the test to 37 items. For this version, the obtained alpha coefficient was .71.

Situational Test of Emotional Management – STEM (MacCann & Roberts, 2008). The original test comprises 44 items and assesses the most complex aspect of emotional intelligence: the ability to modify one's own or others' emotional states. For each of the 44 situations, participants select one of four possible actions they believe would be most effective for the person in the given situation (example: “Andre moves away from the city his friends and family are in. He finds his friends make less effort to keep in contact than he thought they would. What action would be the most effective for Andre? a) Try to adjust to life in the new city by joining clubs and activities there, b) He should make the effort to contact them, but also try to meet people in his new city, c) Let go of his old friends, who have shown themselves to be unreliable, d) Tell his friends he is disappointed in them for not contacting him”). The expert method was used to determine the correct answers, and scoring was conducted using a proportional scoring system (MacCann et al., 2004; Takšić et al., 2006). STEM demonstrated reliability of about α = .68 in the original study, meaningful correlations with emotional understanding, agreeableness, and life satisfaction, supporting its construct and criterion validity. (STEM; MacCann & Roberts, 2008). The STEM also shows good convergent validity through moderate correlations with the MSCEIT “Managing Emotions” branch, indicating it captures emotional management ability, and demonstrates discriminant validity by not correlating with trait emotional intelligence measures, confirming it assesses ability rather than self-perceived emotional traits (Austin, 2010). In this study, due to zero or negative correlations, three items were excluded from further operationalization, resulting in a reduced version of the test with 41 items. For this sample, the obtained alpha coefficient was .80.

Statistical analyses

In the first step, descriptive statistical parameters were calculated (M – mean, SD – standard deviation, Mdn – median, Min – minimum value, Max – maximum value), as well as coefficients of skewness and kurtosis. Values of skewness and kurtosis between -1 and 1 were considered acceptable for the use of parametric tests (Kim, 2013). To examine multicollinearity between variables, Pearson correlation analysis was used. Independent samples t-tests were conducted to test differences between groups of athletes and non-

athletes, as well as between male and female athletes and non-athletes. In order to eliminate potential effects of demographic factors (gender and age), residuals obtained through linear regression analysis were used in further group difference analyses. The large number of tests conducted necessitated the use of the Bonferroni correction. In the case of examining differences among four groups of participants with varying levels of sports activity, a one-way analysis of variance (ANOVA) was applied, with Bonferroni post hoc analyses. Effect sizes were calculated using Cohen's d for pairwise comparisons, with thresholds of 0.2, 0.5, and 0.8 representing small, medium, and large effects, respectively (Cohen, 2013). For ANOVA, partial eta squared (η^2) was calculated to indicate the proportion of variance explained by group differences, with 0.01, 0.06, and 0.14 considered small, medium, and large effects, respectively (Cohen, 2013). Statistical analyses were conducted using SPSS software version 21 (IBM Corp., 2012).

Results

Descriptive parameters for all examined variables are presented in Table 1. Analysis of the obtained values indicates that skewness and kurtosis are within acceptable limits (between -1 and 1) for all variables, suggesting that the distributions are not significantly distorted, and thus the use of parametric statistical methods is justified. To examine potential multicollinearity among the investigated variables, Pearson correlation coefficients were analyzed. It was determined that the coefficients did not exceed the critical threshold of $r < .70$ (see Pallant, 2020), indicating that the variables measure different constructs and should be analyzed separately.

Table 1. Descriptive statistics.

Measures	***M***	***SD***	***Mdn***	***Skew***	***Kurt***	***Min***	***Max***
Extraversion	3.70	0.65	3.75	-0.35	-0.27	1.63	5.00
Agreeableness	3.61	0.57	3.67	-0.49	0.30	1.67	4.89
Conscientiousness	3.72	0.60	3.78	-0.27	0.05	1.67	5.00
Neuroticism	2.78	0.59	2.75	0.22	-0.27	1.25	4.63
Openness	3.48	0.66	3.44	0.02	-0.34	1.44	5.00
ESCQ - PUE	3.70	0.51	3.67	0.08	0.16	2.13	5.00
ESCQ - ELE	3.64	0.55	3.64	0.11	-0.27	2.07	5.00
ESCQ - MRE	3.91	0.42	3.94	-0.33	0.60	2.50	5.00
STEU	21.29	5.08	22	-0.57	0.35	5.00	33.00
STEM	15.77	4.25	16.92	-0.39	-0.74	6.08	25.33

Note. *N* = 481. *M*= mean, *SD*= Standard Deviation, *Mdn*= Median, *Skew*= Skewness, *Kurt*= Kurtosis, Min= Minimum, Max= Maximum, ESCQ – PUE = emotional competence of perceiving and understanding emotions, ESCQ – ELE = emotional competence of expressing and labelling emotions, ESCQ – MRE = emotional competence of managing and regulating emotions, STEU = situational test of emotional understanding, STEM = situational test of emotion management

Table 2 presents the differences between athletes and non-athletes in terms of the five personality traits, three self-report emotional competence questionnaire scales, and two emotional intelligence test scales. In order to eliminate potential influences of demographic characteristics, residuals controlled for gender and age were used. This ensured a more objective interpretation of group differences, i.e., it ensured that the observed differences between groups were not due to varying distributions in terms of gender and age, but rather reflected actual differences in the characteristics being examined. Due to the large number of conducted t-tests, the Bonferroni correction was applied (setting the significance threshold at $p < .005$) in order to control for cumulative Type I errors. According to this correction, statistically significant differences in personality traits were found for extraversion, conscientiousness, and openness to experience. The first two

traits were more pronounced among athletes, while openness to experience was more characteristic of non-athletes. Among the three self-report questionnaire scales, a statistically significant difference was found only for the highest branch of emotional intelligence, with analysis indicating that athletes report greater *emotional competence in managing and regulating emotions* compared to non-athletes. Regarding emotional intelligence tests, statistically significant differences in favor of athletes were also confirmed for the highest branch of emotional intelligence, labeled as *situational emotion management*.

Table 2. Comparison of athletes and non - athletes (residuals controlled for gender and age).

Measures	Athletes (n=277) (*M*±*SD*)	Non-Athletes (n=204) (*M*±*SD*)	*t*(479)	*p*	Cohen's *d*
Extraversion	0.15 ± 0.94	-0.20 ± 1.05	3.88	<.001*	0.36
Agreeableness	0.07 ± 0.95	-0.09 ± 1.06	1.70	.089	0.16
Conscientiousness	0.14 ± 0.98	-0.19 ± 0.99	3.66	<.001*	0.34
Neuroticism	-0.06 ± 1.00	0.09 ± 0.99	-1.61	.108	0.15
Openness	-0.12 ± 0.95	0.16 ± 1.04	-3.03	.003*	0.28
ESCQ - PUE	0.03 ± 0.91	-0.04 ± 1.10	0.79	.432	0.07
ESCQ - ELE	0.09 ± 0.96	-0.12 ± 1.03	2.31	.021	0.21
ESCQ - MRE	0.20 ± 0.94	-0.27 ± 1.02	5.19	<.001*	0.47
STEU	0.09 ± 1.01	-0.12 ± 0.98	2.22	.027	0.20
STEM	0.12 ± 0.95	-0.17 ± 1.04	3.14	.002*	0.29

Note. *t*= t-value, Cohen's *d*= effect size. * *p* < .005 indicates significance after Bonferroni correction

Given that the Bonferroni correction method is quite conservative, which increases the likelihood of missing genuinely significant effects, it should be noted that according to the conventional threshold (p < .05), athletes also achieve statistically significantly higher scores on the *expressing and labeling emotions* scale of the self-report emotional competence questionnaire and on the *situational understanding of emotions* test. An analysis of effect sizes based on Cohen's d values suggests that, although statistically significant, the differences mostly fall within the category of small to moderate effects (Cohen, 2013). This indicates that, while there are differences between athletes and non-athletes, they are not particularly large.

Differences in personality traits and emotional intelligence between male athletes and non-athletes are presented in Table 3, with age controlled as a covariate. Athletes reported statistically significantly higher (p < .005) self-assessed *emotional competence in managing and regulating emotions*, as well as higher scores on the situational test of *emotional management*. On the other hand, non-athletes exhibited significantly higher levels of *openness*. Cohen's d values indicate that these differences fall within the category of moderate effect size. According to the conventional significance threshold (p < .05), athletes also scored significantly higher on conscientiousness and situational understanding of emotions.

Table 3. Comparison of male athletes and non - athletes (residuals controlled for age).

Measures	Male Athletes (*n*= 163) (*M* ± *SD*)	Male Non-Athletes (*n*= 97) (*M* ± *SD*)	*t*(258)	*p*	Cohen's *d*
Extraversion	.05 ± .59	-.08 ± .69	1.610	.109	.21
Agreeableness	.02 ± .49	-.03 ± .61	.634	.527	.08
Conscientiousness	.07 ± .58	-.11 ± .60	2.419	.016	.31

Measures	Male Athletes (*n*= 163) (*M* ± *SD*)	Male Non-Athletes (*n*= 97) (*M* ± *SD*)	*t*(258)	*p*	Cohen's *d*
Neuroticism	-.03 ± .59	.06 ± .60	-1.157	.248	.15
Openness	-.09 ± .61	.15 ± .63	-3.025	.003*	.39
ESCQ - PUE	.00 ± .49	-.01 ± .56	.181	.857	.02
ESCQ - ELE	.04 ± .52	-.07 ± .54	1.748	.082	.22
ESCQ - MRE	.07 ± .41	-.12 ± .43	3.631	<.001*	.47
STEU	.56 ± 5.13	-.94 ± 4.96	2.308	.022	.30
STEM	.66 ± 3.97	-1.11 ± 4.36	3.364	<.001*	.43

Note. * *p* < .005 indicates significance after Bonferroni correction

Regarding the female participants, differences between female athletes and non-athletes are presented in Table 4. Female athletes exhibit significantly higher levels of *extraversion* and greater *emotional competence in managing and regulating emotions* compared to non-athletic women, with these differences falling into the category of medium effect size. It can also be reasonably concluded that female athletes demonstrate significantly higher levels of *conscientiousness*, as the obtained p-value of .006 is at the threshold of the highly conservative Bonferroni correction, and the analysis of Cohen's d values indicates that this difference falls within the category of moderate effect.

Table 4. Comparison of female athletes and non - athletes (residuals controlled for age).

Measures	Female Athletes (*n*= 114) (*M* ± *SD*)	Female Non-Athletes (*n*= 107) (*M* ± *SD*)	*t*(219)	*p*	Cohen's *d*
Extraversion	0.17 ± 0.62	-0.18 ± 0.66	3.961	< .001*	.53
Agreeableness	0.07 ± 0.59	-0.07 ± 0.59	1.769	.078	.24
Conscientiousness	0.11 ± 0.60	-0.11 ± 0.58	2.789	.006	.38
Neuroticism	-0.04 ± 0.58	0.05 ± 0.57	-1.133	.259	.15
Openness	-0.06 ± 0.64	0.06 ± 0.73	-1.343	.181	.18
ESCQ - PUE	0.03 ± 0.42	-0.03 ± 0.57	0.963	.337	.13
ESCQ - ELE	0.06 ± 0.54	-0.06 ± 0.60	1.529	.128	.21
ESCQ - MRE	0.10 ± 0.37	-0.11 ± 0.44	3.748	< .001*	.50
STEU	0.26 ± 5.06	-0.27 ± 4.86	0.794	.428	.11
STEM	0.29 ± 3.97	-0.31 ± 4.37	1.066	.288	.14

Note. * *p* < .005 indicates significance after Bonferroni correction

In order to examine differences between individuals with varying levels of sports activity, specifically between non-athletes and three categories of athletic achievement (low, medium, and high levels of success), a one-way ANOVA was conducted (see Table 5). Based on the conventional threshold of statistical significance ($p < .05$), significant differences were observed between the four groups for 9 out of the 10 variables examined. However, when applying the Bonferroni correction in this case as well, it was concluded that at the stricter level ($p < .005$), statistically significant differences between the groups appear only for the traits of *extraversion* and *conscientiousness*, as well as for *emotional competence of managing and regulating emotions*. Effect size analysis indicates that the variable emotional competence of managing and regulating

emotions falls into the category of medium effect (Cohen, 2013), explaining 6% of the total variance in differences across levels of sports activity (η^2 = .060). A slightly lower percentage of variance is explained by extraversion (3.6%) and conscientiousness (2.9%). Due to these significant effects, these three variables were included in post hoc analyses to determine the specifics of these differences, while the remaining variables were excluded from further examination.

Table 5. Comparison across four levels of sports activity (residuals controlled for gender and age).

Measure	*F* (3, 478)	*p*	η^2
Extraversion	6.005	.001*	.036
Agreeableness	2.657	.048	.017
Conscientiousness	4.800	.003*	.029
Neuroticism	3.218	.023	.020
Openness	3.245	.022	.020
ESCQ - PUE	2.971	.031	.018
ESCQ - ELE	3.684	.012	.023
ESCQ - MRE	10.046	<.001*	.060
STEU	2.021	.110	.013
STEM	3.712	.012	.023

Note. *F* = test for variance between groups and within groups; η^2 = Effect size; * *p* < .005 indicates significance after Bonferroni correction.

The Bonferroni post hoc analyses, presented in Table 6, show that non-athletes display statistically significantly lower values on the *extraversion* scale compared to athletes with low and medium levels of achievement, with these differences falling into the category of moderate effect size. However, the differences between non-athletes and highly successful athletes, as well as the differences among all three groups of athletic success in terms of extraversion, were not found to be statistically significant.

For the *conscientiousness* scale, it was also found that non-athletes report significantly lower values, in this case compared to athletes with low and high levels of success, with these differences also classified as moderate in effect size. Differences between non-athletes and moderately successful athletes, as well as among the three groups of athletic achievement, were not confirmed as statistically significant.

When it comes to *emotional competence of managing and regulating emotions*, the only EI scale (across both self-report and ability-based measures) for which significant differences were confirmed between groups after applying the Bonferroni correction, the post hoc analysis indicates that non-athletes report significantly lower values via self-assessment compared to athletes of all three levels of success. These differences fall into the category of moderate to medium effect sizes. No significant differences were found among athletes of different levels of success.

Table 6. Post hoc comparisons across four levels of sports activity for extraversion, conscientiousness, and emotional competence in managing and regulating emotions (residuals controlled for gender and age).

Measures	Sports Level		*MD*	*SE*	*t*	*pbonf*	Cohen's *d*
Extraversion	Non-athletes	Low level	-.422	.127	-3.310	.006*	.43
		Medium level	-.429	.121	-3.541	.003*	.44
		High level	-.213	.122	-1.751	.483	.22

Measures	Sports Level		*MD*	*SE*	*t*	*pbonf*	Cohen's *d*
Conscientiousness	Low level	Medium level	-.008	.146	-0.052	1.000	.01
		High level	.209	.147	1.421	.935	.21
	Medium level	High level	.216	.141	1.528	.763	.22
	Non-athletes	Low level	-.380	.128	-2.973	.019*	.39
		Medium level	-.252	.122	-2.071	.234	.26
		High level	-.374	.122	-3.061	.014*	.38
	Low level	Medium level	.128	.147	.873	1.000	.13
		High level	.006	.147	.044	1.000	.01
	Medium level	High level	-.122	.142	-.858	1.000	.12
ESCQ - MRE	Non-athletes	Low level	-.619	.126	-4.920	< .001*	.64
		Medium level	-.371	.120	-3.100	.012*	.38
		High level	-.425	.120	-3.536	.003*	.44
	Low level	Medium level	.248	.145	1.714	.523	.26
		High level	.194	.145	1.340	1.000	.20
	Medium level	High level	-.054	.140	-.384	1.000	.06

Note. MD= Mean Difference, SE= Standard Error, pbonf= Bonferroni corrected p-value; * p < .05 indicates significance after Bonferroni correction

Discussion

The renewed focus on personality traits in sport, along with a moderate number of studies addressing EI in the sports context, points to the relevance and potential of these constructs for understanding the diverse dynamics of athletic activity. At the same time, it highlights the need for further investigation of these phenomena. With this in mind, we conducted a study aimed at examining whether athletes and non-athletes differ in terms of personality traits and EI (operationalized through self-report questionnaires and ability-based tests), and whether specific distinctions exist within gender groups (male athletes vs. male non-athletes; female athletes vs. female non-athletes), as well as across different levels of sport participation and achievement. The final conclusions suggest that personality traits and EI may serve as useful predictors for understanding engagement in sport, with *emotional competence in managing and regulating emotions* standing out as particularly important.

Comparing the personality traits of athletes and non-athletes, this study confirms the findings of previous research that athletes are primarily more *extroverted* than non-athletes (see Allen et al., 2013; Paunonen, 2003), but also more *conscientious*, which is also in line with some earlier works (Steca et al., 2018). A tendency toward intensive social interactions, organization, discipline, and goal-oriented behavior are characteristics that certainly find fertile ground in the realm of sports activities. However, we cannot prejudge the causal direction of this relationship (whether extroverted and conscientious individuals enter sports, or if sports shape them, or whether it is both), considering that our research design is cross-sectional. In addition to these two traits, a significant difference between athletes and non-athletes in our sample was confirmed only for *openness to experience*. Allen et al. (2013) cite several studies emphasizing athletes' greater inclination toward openness to new ideas and experiences, creativity, and curiosity, whereas Steca et al. (2018) report no significant differences for their sample, pointing to the consistency of these findings with the majority of existing research. What is specific to our study is that non-athletes exhibited significantly higher *openness to experience* than athletes. At first glance, sports are characterized by constant unpredictable and challenging situations, reflected in changing technical-tactical tasks, as well as variable conditions (opponents, surfaces, crowds, etc.), which we assume attracts and develops openness to experience. However, we hypothesize that the organization of sports activities, especially in certain cultures with pronounced autocratic leadership styles, can easily take the form of a highly structured, routinized, rigid

system with clear rules, which as such encourages conformity more than a tendency to explore, experiment, and be open to new ideas. It is important to note that, although statistically significant, the differences obtained for the three mentioned traits are of moderate effect, which implies that they can serve as predictors of sports engagement, but they are not key factors, and there are other factors that shape sports participation.

We found it interesting to examine the differences between athletes and non-athletes separately for men and women, and it was determined that the mentioned higher degree of *openness to new experiences* in non-athletes compared to athletes for the entire sample is particularly pronounced in the male population. This raises the question for future research to focus on better understanding this phenomenon, especially from the perspective of the hypothesis that in male sports in Bosnia and Herzegovina, as well as in the Balkans in general, a highly structured and rigid work model predominates, which "stifles" curiosity, creativity, and inquisitiveness. It is also important to highlight the existence of moderate effect differences on the *conscientiousness* scale. Athletes show higher values, although this difference is significant only at the level of conventional values ($p < .05$), which is consistent with some earlier studies (Malinauskas et al., 2014; Steca et al., 2018). This is also the case when comparing female athletes and female non-athletes. Regarding other traits in the female population, a statistically significant difference with a medium effect was confirmed only for the *extraversion* scale, where female athletes show a greater tendency toward this characteristic. Although there is a serious limitation in researching differences between female athletes and non-athletes concerning the Big Five personality traits, our results indicate that there are no specificities for the female population, as was the case for the male population. In other words, the greater tendency toward *extraversion* and *conscientiousness* in female athletes is complementary to existing knowledge about the general differences between athletes and non-athletes of both sexes.

We also focused on the question of personality trait differences between athletes of higher and lower levels of success and non-athletes, considering that the analysis of existing research (see the introduction) concludes that more successful athletes are characterized by more pronounced adaptive personality traits (extraversion, conscientiousness, agreeableness, openness to new experiences) and are less prone to maladaptive traits (neuroticism). By categorizing our sample into 4 groups (non-athletes and 3 levels of sports success), significant differences were found between the groups for *extraversion* and *conscientiousness* traits (it is important to note that significant differences were also found for the other three traits, but according to conventional values of $p < .05$, which were of moderate effect). Further analysis showed that the significance of the differences on the *extraversion* and *conscientiousness* scales, which had a moderate effect, stemmed exclusively from the differences between non-athletes on one side and certain groups of athletes with varying levels of success on the other. However, in both cases, no differences were found between athletes of different levels of success. What draws attention is the fact that a higher degree of *extraversion* in athletes is characteristic only for athletes of lower and middle levels of success, while those at the highest level are somewhere between these two groups of athletes and non-athletes and do not significantly deviate from them. This nonlinear nature of the relationship between *extraversion* and *success in sports* may be explained by the different nature of the demands required at different levels of sports success. We assume that lower sports levels are characterized by a need for sociability and openness to the outside world, while at the highest levels, other factors such as discipline, focus, mental stability, and even egoism (self-centeredness) may play a role in enabling better functioning.

The different nature of the differences in *conscientiousness* partly justifies this hypothesis. On the *conscientiousness* scale, differences between the groups stem exclusively from the differences between non-athletes on one side and athletes at lower and higher levels on the other. However, within these three groups of athletes, no significant differences were found. One possible explanation is that entering sports and reaching the regional competitive level requires a certain degree of conscientiousness, which is not a priority for advancing to the higher, national level of competition, where talent may play a more significant role.

However, to reach the international level, talent alone is no longer enough, and along with it, a high level of discipline, persistence, and focus on improving one's abilities is required. In addition to these assumptions about the nature of the differences, we are certainly aware of the problem and the potential effect of applying the method of categorizing athletes for different sports. While the majority of studies, due to the complexity of operationalizing sports success for various sports, use homogeneous samples (athletes from the same sport), we opted for a heterogeneous sample (athletes from different sports) in order to obtain more generalizable conclusions, and we developed a complex classification protocol, which presents certain methodological challenges and potentially questions the criterion validity of the given method. Future research should address this issue to enable the formulation of general conclusions about the relationship between personality traits and sports success, rather than obtaining data that are only applicable to one sport.

When it comes to EI, although athletes show significantly higher scores (according to the conventional value of $p < .05$) both on the self-assessment scale of their emotional competence of expressing and labeling emotions and on the situational test of emotional understanding, after the Bonferroni correction, a significant difference of moderate effect was confirmed exclusively for the highest hierarchical branch – the *ability to manage emotions*, both in the self-assessment questionnaire and in the test. In other words, athletes not only rate their ability to consciously regulate their own and others' emotions to achieve desired behaviors higher than non-athletes, but the tests also confirm that their ability to resolve emotionally complex situations is at a higher level. We assume that hierarchically lower and less complex emotional competencies, such as understanding and labeling emotions, do not require complex life situations to develop, and are developed through everyday life activities. On the other hand, sports activities are filled with emotionally intense and complex situations, thus forcing athletes to develop a higher degree of emotional competence – *emotion management*, which is a good prerequisite for successful performance. Previous research generally confirms a higher degree of EI in athletes compared to non-athletes (see Ubago-Jiménez et al., 2019). However, these studies use different instruments and often do not specify the results of individual EI components. This obliges us to focus on the standardization of the methodological approach to researching EI, specifically in the context of sports activity, in order to enable the comparison of results and synthesis of findings, i.e., drawing conclusions about the relationship between individual branches of EI and sports activity.

By separating the sample according to gender and examining the differences between male athletes and non-athletes, similar results to the overall sample were found. Male athletes rated their competencies in *regulating and managing emotions* at a significantly higher level than male non-athletes, which was also confirmed by significant differences on the situational emotion management test, with differences approximately at the level of moderate effect. Additionally, male athletes scored higher on the situational test of *emotional understanding*, but this difference was of moderate effect and significant only at the conventional significance level. When these differences were examined in the female sample, the only significant difference, of moderate effect, was confirmed for the *emotional competence of managing and regulating emotions*, where female athletes showed higher values compared to female non-athletes. Interestingly, no significant differences were found on the other self-assessment scales, especially on the EI tests, even when the conventional significance level was applied. This somewhat aligns with the results of the study by Rodriguez-Romo and colleagues (2021), one of the few on this topic. The authors found that men at higher sports levels scored higher on the emotional repair scale (which complements the emotional management scale) compared to men at lower sports levels and men who engage in sports but do not compete, while a comparison of the results of female athletes and non-athletes did not show significant differences. The explanation for these results may lie in the findings of numerous studies indicating that women in the general population tend to exhibit higher EI than men (Extremera et al., 2006; Kafetsios, 2004). We assume that, regardless of whether the causes are biological or social, women, through growing up in "typical" life conditions, achieve a higher level of EI (Thompson & Voyer, 2014), and according to the "ceiling

effect" principle, their ability to further improve their EI through sports is more limited compared to men, who start at a lower level. In other words, sport emerges as a useful tool for a more significant improvement in EI among men, particularly in its most important aspect, which is *emotion management*.

The final question regarding EI concerns understanding the differences between respondents in the four categories of sports activity (non-athletes and 3 levels of athletic success), where it was found that, according to the conventional value ($p < .05$), there are significant differences for all EI scales except for situational emotional understanding. According to the Bonferroni correction, a statistically significant difference was found only for *emotional competence in managing and regulating emotions*, and further analysis indicated that non-athletes perceive their ability to manage and regulate emotions as significantly weaker than athletes in all three success categories. In other words, even the lowest level of athletic success is associated with a higher degree of *emotional management competence* (or at least a subjective assessment of it) compared to individuals who are not involved in sports. What is interesting in our research, and inconsistent with many previous studies (Kopp & Jekauc, 2018; Laborde et al., 2016; Merino Fernández et al., 2022; Montenegro-Bonilla et al., 2024), is that athletes across different levels of athletic achievement do not show significant differences on this scale. However, it is important to note that there are also studies that align with our findings (Alhabsyi et al., 2022). We are aware that the previously mentioned issue of applying the method of categorizing athletic success levels in a heterogeneous sample of athletes may be the cause of the lack of statistically significant differences. However, it should be considered that this may not be a methodological limitation, but rather the results are due to the specificity of the sample, and that the reference studies were conducted in different socio-cultural contexts.

Conclusion

The increasing emphasis on the importance of physical activity for contemporary man leads to the re-evaluation of the relationship between this activity and the psychological characteristics of the person, highlighting the need for more comprehensive scientific approaches. Aiming for this, the results obtained point to the significance of personality traits and emotional intelligence in understanding sports activity, or inactivity. Specifically, in our case, participants in sports activities are more strongly characterized by highly desirable traits such as *conscientiousness* and *extraversion* compared to non-athletes, which is consistent with the results of previous studies. What is not consistent with previous research is that, in our case, non-athletes exhibit a greater degree of *openness to new experiences*. This is particularly pronounced in the male population, which suggests that future research should seriously consider socio-cultural parameters (e.g., leadership styles, social values, organizational systems, tradition, etc.). An additional argument for the specificity of this sample is the absence of personality trait differences between athletes of different levels of sports success.

Athletes also show a higher level of EI, primarily in the highest hierarchical branch, *emotion regulation ability*, which was confirmed by both self-assessment questionnaires and tests. Dividing the sample by gender suggests that sports activity may have more pronounced effects on the male population than on females. While women involved in sports assess their ability to regulate emotions higher than non-athletes, this is not confirmed by the tests, whereas the differences in men are confirmed by both instruments. Moreover, there are additional arguments indicating a tendency for male athletes to demonstrate greater situational *emotion understanding* than non-athletic men. Interestingly, as with personality traits, no significant differences in EI were found between athletes of different levels of success.

The multidimensional research framework, the dual method of EI operationalization, and the culturally specific, relatively large, and sport-type diverse sample of participants represent key methodological strengths of this study, justifying the serious consideration and interpretation of the findings. However, it should be noted that the study has methodological limitations. Given that this is a cross-sectional study, causal conclusions cannot be drawn. The study primarily relies on self-assessment instruments that

are not specifically adapted to the sports context, which may introduce bias affecting the validity of the findings. Generating a universal method for classifying levels of sports success is methodologically challenging and may undermine the consistency and reliability of the obtained categorical distinctions. Furthermore, the sample is limited to the territory of Bosnia and Herzegovina, which restricts the generalizability of the findings. Considering these limitations, it is recommended that future research employ a longitudinal design to clarify causal mechanisms, and utilize a culturally broader sample to ensure the generalizability of the conclusions. Further refinement of findings regarding performance levels requires dedicated investigation of these relationships separately across different sports. If future research manages to integrate all these elements, it could lead to more significant and deeper insights into this complex area. This would result in high-quality practical guidelines for experts in contemporary sports and strengthen the interest of the scientific community in deepening knowledge on the essential psychological aspects of sports

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