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Original Article

Comparison of Multiple Intelligences in Sportspeople and E-Sportspeople

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What is already known on this topic?

- *Gardner's (1983) Theory of Multiple Intelligences reconceptualizes intelligence as a multidimensional construct, comprising eight distinct domains: bodily-kinesthetic, visual-spatial, logical-mathematical, interpersonal, intrapersonal, verbal-linguistic, musical, and naturalistic intelligence, each representing a unique form of human cognitive potential.*
- *Performance in both traditional and electronic sports involves a combination of physical, cognitive, and emotional skills. Whereas bodily-kinesthetic and interpersonal intelligences are prominent in conventional athletes, e-sports players show enhanced logical-mathematical, visual-spatial, and intrapersonal intelligences, reflecting domain-specific cognitive demands.*
- *Team sports (e.g., football, basketball) emphasize interpersonal and visual-spatial intelligences, whereas individual sports (e.g., swimming, athletics, combat sports) rely more heavily on intrapersonal and bodily-kinesthetic intelligences (López et al., 2014).*
- *Research indicates that esports players tend to score lower on traits such as extraversion and conscientiousness compared to their traditional athletic counterparts; however, they demonstrate superior performance in cognitive domains including sustained attention, strategic decision-making, and visual-spatial processing (Trotter et al., 2023).*

Abstract

The aim of this study is to examine the multiple intelligence levels of those who are sportspeople and e-sportspeople. A total of 932 people participated. Of the participants, 312 are sportspeople, 318 are e-sportsmen, and 302 are both sportspeople and e-sportsmen. In the study, the height, body weight, and multiple intelligence areas of the participants were evaluated. The ages of the participants were 20.46 ± 4.39, height: 153.00 ± 10.04, and body weights: 71.59 ± 15.16. When the average intelligence of the whole group is examined; verbal intelligence mean score was 32.02 ± 6.93; logical intelligence 35.55 ± 7.65; visual intelligence 35.94 ± 6.60; musical intelligence 35.41 ± 6.92; bodily intelligence 39.98 ± 5.82; social intelligence 38.71 ± 6.11; intrapersonal intelligence 36.01 ± 6.17; naturalistic intelligence 35.49 ± 7.87. In conclusion, e-sportspeople have high points for logical-mathematical, bodily-kinesthetic, and interpersonal-social intelligences, while sportspeople had high points for bodily-kinesthetic, interpersonal-social, and intrapersonal intelligences. The group playing both types of sport had higher mean points for all intelligence areas. This situation demonstrates the synergy between physical and digital sports. If the results of studies with higher participation performed in the future are similar to the results of this study, multiple intelligences may be considered an important criterion for directing people toward sports and e-sports. It may offer innovations for future athlete development models. Additionally, playing sports and e-sports together may positively affect multiple intelligence levels. It can be considered an innovative approach for a holistic athlete development model.

Keywords: E-sports and sports, intelligence, multiple intelligence

Introduction

The theory of multiple intelligences (TMI) is a theory investigating and assessing two types of brain processes: learning and knowledge acquisition (Gardner, 1983). Defined by Gardner, TMI emerged based on the view that human intelligence is continuously developing and that traditional IQ tests are inadequate to measure mathematical and verbal intelligence (Demirel, 2006; Yavuz, 2005). In the book entitled "Frames of Mind," Howard Gardner explained TMI for the first time. Gardner stated that intelligence has eight areas that operate independently of each other.

The eight intelligence areas proposed by Gardner are:

- Verbal-linguistic intelligence: an individuals skill in effectively using language in written and verbal form (Bümen, 2005).
- Logical-mathematical intelligence: people with this intelligence have skills in effectively using numbers. Computer programmers, statisticians, and mathematicians have the ability to follow logic about events by creating cause-effect relationships (Saban, 2002).
- Visual-spatial intelligence: shape and color intelligence assisting in the ability to perceive and reflect images of three-dimensional objects, colors, and shapes (Saban, 2002).

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What this study adds to this topic?

- *This study contributes to the relatively underexplored domain of sports science by examining the relationship between multiple intelligences and esports players, thereby addressing a significant gap in the literature. By extending the conceptual boundaries of athletic performance beyond the physical realm, it offers an innovative framework for future athlete development models in both traditional and digital contexts. Furthermore, it makes a substantial contribution to re-evaluating the mind-body paradigm, particularly in an increasingly digitalized world, where cognitive, emotional, and sensorimotor skills converge as essential components of elite performance.*

- Musical-rhythmic intelligence: ensures differentiation of sounds, notes, rhythms, and different voices. This intelligence field assists in the ability to play musical instruments and in understanding and interpreting concepts related to music.
- Bodily-kinesthetic intelligence: ensures the ability to use physical parameters like balance, coordination, strength, and flexibility well. It is the skill of combining emotion and thoughts in physical performance. Sportspeople, sculptors, and surgeons dominantly have this type of intelligence (Yavuz, 2005).
- Interpersonal-social intelligence: the ability to communicate well verbally or nonverbally with people and persuasion skills (Yavuz, 2005).
- Intrapersonal intelligence: this intelligence field involves a person's own thoughts, reactions, and assessment skills. People who like individual work and freedom dominantly have this intelligence type (Saban, 2002).
- Naturalistic intelligence: people with this intelligence interact with plants and animals. They are sensitive to natural responses. Fields like biology, zoology, biology, mountaineering, scouting, and medicine are related to naturalistic intelligence (Saban, 2002).

Research about TMI and effective learning in education considered that traditional learning and teaching methods pacified students and directed them to rote learning. New methods like TMI actively include the student in the learning process, making learning continuous and concluding that people can continuously learn, renew, and develop themselves. Considering that educators can easily and reliably assess different intelligences and that everyone may have different intelligences, different from traditional educational methods, individual-centered teaching should be supported (Başaran, 2004).

Theory of multiple intelligences (TMI) accepts that people have different intelligence types; however, individuals develop more in their dominant intelligence area compared to other areas based on their strengths. The high and low intelligence areas of individuals display differences. Research was completed with a total of 658 students, including 321 sports high school students and 346 general high school students. The general high school students had higher verbal, logical, visual, and interpersonal intelligences compared to the sports high school students. Sports high school students were found to only have higher bodily intelligence compared to the general high school students (Güllü & Tekin, 2009). Multiple intelligence studies of sportspeople generally found they had high bodily-kinesthetic intelligence. Kartal (2012) performed a study with a total of 150 people from 11 to 18 years of age participating and not participating in different sports branches and found that the bodily-kinesthetic and social (interpersonal) intelligences were dominant in all sports branches. The sedentary group dominantly had intrapersonal and social intelligences. The results of this study emphasized that sport was effective on bodily-kinesthetic intelligence.

Studies were performed about pushing the boundaries of human strength in order to be successful in sport, and many science branches benefit from these (Muratlı, 1976). Just as developments in technology affected different areas, new changes and transformations have occurred in sport. The technological changes occurring in sport have led to the emergence of new sports branches and sporting trends. One of these new sporting trends is electronic sports (e-sport) (Akgöl, 2019). Electronic sport (e-sport) is an area of sports activity benefiting from information and communication technologies with the aim of developing the mental and bodily abilities of people (Wagner, 2006). According to Argan et al, e-sport is a sport requiring both physical and mental effort where people from one corner of the world can meet and play with people from other corners of the world through the internet or where people from different places in the world can play hosted by large electronic sports organizations (Argan, 2006). In e-sport, as in modern sports, there are meetings/competitions. Games have an important place in creating strategies and tactics. An e-sportsperson may make an average of 400 movements per minute using keyboard and mouse. A competition produces cortisol at race car driver levels and heart rates are similar to marathon runners (Banyai et al., 2018; Yükçü & Kaplanoğlu, 2018). In e-sports, factors like thinking speed, intuition, intelligence, team games, manual dexterity, visual ability, concentration, and leadership affect success. Thinking speed, intelligence, and intuition are factors ensuring success in determining the next move of the opposing player. These factors cause development of the player's dexterity (Akın, 2008). Hand-eye coordination is very important for e-sportspeople. Additionally, it is important to identify the correct move and best strategy to win (Wagner, 2006). Here, human intelligence and skills in using it emerge. One of the important elements for active sportspeople and e-sports players is the ability to accurately use intelligence during competition. The basic requirement for sporting success is responsibility, while competition requires healthy intelligence and mental functioning. By noting these requirements within sport, the need to be prepared for all types of opposition, not just physical but also intelligence and mental opposition, emerges in sports competitions (Saban, 2002).

Sport positively affects a person's life from many different aspects including physiological, psychological, and bodily. Participating in regular sport and e-sport contributes to the bodily and social development of individuals, in addition to being considered to have different effects on intelligence dimensions. Based on this idea, in this study, the multiple intelligence areas of people playing sports, e-sports, and both together were investigated to reveal the similarities and differences.

Material and Methods

Subjects

Nine hundred thirty-two active, licensed for at least five years between the ages of 18–35 (20.46 ± 4.39) participated in the study voluntarily. Of the participants, 312 are sportspeople, 318 are e-sportspeople, and 302 are both sportspeople and e-sportspeople. The study protocol was in accordance with the Declaration of Helsinki and was approved by the Ethics Committee of İstanbul University-Cerrahpaşa in accordance with international ethical rules (Approval No.: E-74555795-050.01.04-229074; Date: November 5, 2021). All participants were informed in writing, and their consent was obtained.

Measurements

This research was designed with the "screening and descriptive model." Data collection tools included the personal information form for participants and the "Multiple Intelligences Inventory" developed by Özden (2008). The inventory comprises 80 questions. Points are assessed as indicating development with 32–40 points considered very developed, points from 24–31 developed, points from 16–23 moderately developed, points from 8–15 slightly developed, and points from 0–7 not developed. Ratings on the scale are as follows: 1 = does not apply to me, 2 = slightly applies to me, 3 = partly applies to me, 4 = applies to me, 5 = fully applies to me. Each section on the inventory comprises items labeled from A to H. The same letters in each section represent one intelligence area. The intelligences represented by items on the inventory are as follows: A = verbal-linguistic intelligence, B = logical-mathematical intelligence, C = visual-spatial intelligence, D = musical-rhythmic intelligence, E = bodily-kinesthetic intelligence, F = interpersonal-social intelligence, G = intrapersonal intelligence, and H = naturalistic intelligence. The area receiving the highest points according to the inventory is concluded to be the more dominant intelligence. Reliability metrics for the Multiple Intelligences Inventory (Özden, 2008) demonstrate robust psychometric properties. The Cronbach's alpha coefficient for the entire instrument was reported as .90, while the coefficients for the sub-dimensions ranged from .81 to .93. Specifically, the alpha values were found to be .85 (verbal-linguistic intelligence), .83 (logical-mathematical intelligence), .84 (visual-spatial intelligence), .93 (bodily-kinesthetic intelligence), .81 (musical-rhythmic intelligence), .92 (interpersonal-social intelligence), .87 (intrapersonal intelligence), and .82 (naturalistic intelligence).

Data Analysis

The statistical analysis was performed by using the SPSS 28 (IBM SPSS Corp.; Armonk, NY, USA) software program. The descriptive statistics of age, height, weight, and multiple intelligence were presented as minimum, maximum, and mean. The normality was tested using the Kolmogorov–Smirnov test. The visual methods such as the histograms and probability plots were also used to determine the normality. The data were found to be normally distributed. To compare the multiple intelligence results, the one-way analysis of variance (ANOVA) was employed. Tukey test was used for the difference between groups. $p < .05$ was accepted as statistically significant.

Results

Ages of the participants; 20.46 ± 4.39, height; 153.00 ± 10.04, body weights; it was found to be 71.59 ± 15.16 (Table 1).

When the average intelligence of the whole group is examined; verbal intelligence mean score was 32.02 ± 6.93; logical intelligence 35.55 ± 7.65; visual intelligence 35.94 ± 6.60; musical intelligence 35.41 ± 6.92; bodily intelligence 39.98 ± 5.82; social intelligence 38.71 ± 6.11; intrapersonal intelligence 36.01 ± 6.17; and naturalistic intelligence 35.49 ± 7.87 were found (Table 2).

When the verbal intelligence of the groups is investigated, sportspeople had mean points of 31.62 ± 7.04. E-sportspeople had points of 31.37 ± 5.86, and people playing both types of sport had points of 34.17 ± 7.13. Though the verbal intelligence of those playing both was higher compared to the other groups, this difference was not significant ($F = 2.00$, $\eta^2 = .004$, $p = .138$). When logical intelligence is investigated, mean points were 34.68 ± 7.76 for sportspeople, 35.48 ± 6.81 for e-sportspeople, and 39.00 ± 7.08 for those playing both. The logical intelligence of those playing both types of sports was higher compared to the other groups ($F = 4.445$, $\eta^2 = .009$, $p = .013$). When visual intelligence is investigated, mean points were 35.75 ± 6.41 for sportspeople, 34.30 ± 6.30 for e-sportspeople, and 38.32 ± 7.10 for people playing both. The visual intelligence of people playing both types of sport was higher compared to the other groups ($F = 3.559$, $\eta^2 = .008$, $p = .030$). When musical intelligence is investigated, mean points were 34.95 ± 6.62 for sportspeople, 34.68 ± 6.98 for e-sportspeople, and 37.79 ± 7.66 for people playing both. The musical intelligence of people playing both sports was higher compared to the other groups ($F = 2.499$, $\eta^2 = .005$, $p = .045$). When bodily intelligence is investigated, mean points were 40.81 ± 5.07 for sportspeople, 36.34 ± 7.05 for e-sportspeople, and 39.91 ± 6.36 for

Table 1.
Descriptive Characteristics of the Whole Group

	N	Mean	Std Dev.	Min.	Max.
Age	932	20.46	4.39	18	35
Height	932	176.26	10.04	153	210
Body weight	932	71.59	15.16	46	125

Note: max = maximum; min = minimum; N = number of participants; Std = standard deviation.

Table 2.
Multiple Intelligence Means of the Whole Group

	N	Mean	Std Dev.	Min.	Max.
Verbal intelligence	932	32.02	6.93	15	50
Logical intelligence	932	35.55	7.65	14	50
Visual intelligence	932	35.94	6.60	16	50
Musical intelligence	932	35.41	6.92	17	50
Bodily intelligence	932	39.98	5.82	21	50
Social intelligence	932	38.71	6.11	20	50
İntrapersonal intelligence	932	36.01	6.17	20	50
Naturalistic intelligence	932	35.49	7.87	15	50

Note: max = maximum; min = minimum; N = number of participants; Std = standard deviation.

Table 3.
Comparison of Intelligence Differences by Groups

	Groups	N	Mean	Std Dev.	Df	Mean.S	η^2	F	*p*
Verbal intelligence	Sportspeople	312	31.62	7.04	2	95.49	.004	2.00	.138
	E-sportspeople	318	31.37	5.86					
	People playing both types of sport	302	34.17	7.13					
Logical intelligence	Sportspeople	312	34.68	7.76	2	251.2	.009	4.445	**.013**
	E-sportspeople	318	35.48	6.81					
	People playing both types of sport	302	39.00	7.08					
Visual intelligence	Sportspeople	312	35.75	6.41	2	151.4	.008	3.559	**.030**
	E-sportspeople	318	34.03	6.30					
	People playing both types of sport	302	38.32	7.10					
Musical intelligence	Sportspeople	312	34.95	6.62	2	117.8	.005	2.499	**.045**
	E-sportspeople	318	34.68	6.98					
	People playing both types of sport	302	37.79	7.66					
Bodily intelligence	Sportspeople	312	40.81	5.07	2	237.2	.016	7.460	**.001**
	E-sportspeople	318	36.34	7.05					
	People playing both types of sport	302	39.91	6.36					
Social intelligence	Sportspeople	312	39.00	5.71	2	44.129	.003	1.183	.309
	E-sportspeople	318	37.10	6.39					
	People playing both types of sport	302	38.97	7.26					
Intrapersonal intelligence	Sportspeople	312	36.11	6.18	2	44.478	.003	1.167	.314
	E-sportspeople	318	34.55	5.51					
	People playing both types of sport	302	36.88	6.62					
Naturalistic intelligence	Sportspeople	312	35.17	7.59	2	148.393	.005	2.429	**.041**
	E-sportspeople	318	34.00	6.93					
	People playing both types of sport	302	38.02	9.26					

Bold values indicate statistically significant differences ($p < 0.05$). *Note:* Df = Degrees of Freedom; Mean.S = Mean Square; max = maximum; min = minimum; η2: Eta-squared; N = number of participants; *p* = *p*-value; Std = standard deviation.
*$p < .05$

those playing both. The points for sportspeople and people playing both sports were higher compared to e-sportspeople ($F = 7.460$, $\eta^2 = .016$, $p = .001$). When interpersonal-social intelligence is investigated, mean points were 39.00 ± 5.71 for sportspeople, 37.10 ± 6.39 for e-sportspeople, and 38.97 ± 7.26 for people playing both. Though the interpersonal-social intelligence points of sportspeople and people playing both sports were higher compared to e-sportspeople, this result was not statistically significant ($F = 1.183$, $\eta^2 = .003$, $p = .309$). In the intrapersonal intelligence area, mean points were 36.11 ± 6.18 for sportspeople, 34.55 ± 5.51 for e-sportspeople, and 36.88 ± 6.62 for people playing both. There was no difference between the groups for intrapersonal intelligence ($F = 1.167$, $\eta^2 = .003$, $p = .314$). In the naturalistic intelligence area, mean points were 35.17 ± 7.59 for sportspeople, 34.00 ± 6.93 for e-sportspeople, and 38.02 ± 9.26 for people playing both. The naturalistic intelligence of people playing both sports was higher compared to the other groups ($F = 2.429$, $\eta^2 = .005$, $p = .041$). Detailed information about the intelligences in the groups is given (Table 3).

The Tukey HSD post hoc multiple comparison analysis revealed significant differences among the groups for several variables ($p < 0.05$). For Logical intelligence, a significant difference was observed between the athlete group and the athlete–e-sports group, favoring the athlete–e-sports group (Mean Difference = -4.31, 95% CI: -7.73 to -0.90, $p = 0.009$). For Visual intelligence, a significant difference was identified between the e-sports group and the athlete–e-sports group, favoring the athlete–e-sports group (Mean Difference = -4.29, 95% CI: -8.18 to -0.39, $p = 0.027$). For Bodily intelligence, more pronounced differences were observed among the groups. The athlete group demonstrated significantly higher values than the e-sports group (Mean Difference = 4.47, 95% CI: 1.73–7.20, $p < 0.001$). In addition, a significant difference was found between the e-sports group and the athlete–e-sports group, favoring the athlete–e-sports group (Mean Difference = -3.57, 95% CI: -6.93 to -0.20, $p = 0.035$). No statistically significant differences were detected among the groups for the remaining variables (Verbal intelligence, Musical intelligence, Social intelligence, Intrapersonal intelligence, and Naturalistic intelligence) ($p > 0.05$).

Discussion

Previous studies examined exercise models about identifying and developing intelligences in sportspeople (Mıtchell & Kornodle, 2014; Wei-ting et al., 2011). Additionally, multiple intelligences were studied many times in a variety of groups in education and art. This study researched the intelligences in people participating in e-sports and sports. The results of the study found that multiple intelligence levels in those playing both sports and e-sports were higher compared to those only playing sports or e-sports.

The theory of multiple intelligences aims to use diverse methods instead of classic and monotonous teaching. People have individual differences and different intelligence areas. People learn in different ways according to their dominant intelligence. In sports, multiple intelligence studies have been performed for many sportspeople in different sports branches. The multiple intelligences of sportspeople were identified and learning methods suitable for their dominant intelligence field are used in training. Multiple intelligences may be considered a significant criterion in directing people toward sports and e-sports.

When the results of this study are investigated, the highest points in the research for multiple intelligence subdimensions were for bodily-kinesthetic intelligence, with the lowest points for the verbal-linguistic intelligence field.

The present findings demonstrated no statistically significant differences between sportspeople and e-sportspeople in intrapersonal and verbal intelligence. This result may reflect the overlapping psychological and social demands present in both performance domains, rather than indicating a lack of these intelligence types. Competitive sport and e-sport participation both require continuous self-monitoring, emotional regulation, social coordination, and communicative competence, which may contribute to similar developmental trajectories in these intelligence areas. Regarding verbal intelligence, previous research suggests that it plays a facilitative role in performance-related processes but does not serve as a primary differentiating factor between performers (Armstrong, 2018). Therefore, the lack of observed differences may indicate that verbal intelligence supports performance indirectly and is shaped through shared training, competition, and social interaction experiences. Taken together, these findings suggest that intrapersonal, interpersonal, and verbal intelligence are not strongly differentiated by sport modality but are instead largely influenced by common environmental exposures and experiential learning processes inherent in competitive performance settings.

In the literature, studies of groups not participating in sports found inverse results. Rotnitsky and Yavich (2020) in a study of 158 middle school and high school students, it was found that 80.9% of successful students had dominant logical-mathematical intelligence. Only 48.4% of students at normal levels had dominant logical-mathematical intelligence. The researchers concluded that logical-mathematical and verbal-linguistic intelligence impacted success in the educational system at high rates. In this research, the intelligence field with the highest points was bodily-kinesthetic intelligence. This result supports the literature as the majority of participants were sportspeople. In a study by Şuruba-Rusen et al. (2020), they researched a total of 111 students, 42 women and 69 men, attending a physical education and sports science university. Both women and men were found to have dominant bodily-kinesthetic intelligence. Research including 156 sportspeople by Bozkuş et al. (2014) identified that the area with the highest points among participants was bodily-kinesthetic intelligence. Ermiş (2018) researched a total of 1580 university students, including 524 who played sports and 1055 who did not. Those playing sports had high bodily-kinesthetic intelligence points, consistent with the literature. Those not playing sports had higher social intelligence compared to those playing sports, and the reason was considered to be completing more social activities in their leisure time.

The data results from the groups included in the research show that sportspeople had the highest bodily-kinesthetic intelligence with a mean of 40.81 points. This was followed by interpersonal-social intelligence with mean points of 39.00 and intrapersonal intelligence with points of 36.11. In this study, the data from the sportspeople support the literature results. Another research study in the literature comprised 762 sports high school students, including 299 girls and 463 boys. Participants had higher bodily-kinesthetic intelligence compared to the other intelligences. The reason for this was interpreted as being due to students comprising individuals who played sport regularly (Çalı & Kangalgil, 2020). Previous studies stated that a review of sports and multiple intelligences showed sportspeople had more dominant bodily-kinesthetic intelligence levels compared to other multiple intelligence areas (Düzgün & Akkoç, 2021; Kurtz et al. 2013).

E-sportspeople had the highest points for the interpersonal-social intelligence field with mean points of 37.10. The reason for this result is that e-sportspeople play some games in teams requiring continuous communication with themselves and in groups and thus may have developed social intelligence features like empathy and playing together. This intelligence was followed by bodily-kinesthetic intelligence with mean points of 36.34 and mathematical-logical intelligence with points of 35.48. The findings regarding the logical-mathematical domain align with the conceptualization of e-sports as a high-level cognitive activity requiring advanced algorithmic thinking. The necessity to navigate intricate problem-solving scenarios and evaluate statistical probabilities in a split second appears to be a primary driver for this intelligence profile. As noted by Adachi and Willoughby (2013), engagement with strategy-oriented games refines the ability to establish causal links between dynamic variables. Consequently, professional gamers consistently exercise these mental faculties through the continuous application of mathematical logic and data-driven assessments during gameplay (Banyai et al., 2019; Zayed, 2023).

Those playing both sports and e-sports were found to have high mean scores for all intelligence fields. Bodily-kinesthetic intelligence was highest with mean points of 39.91. This was followed by logical-mathematical intelligence with mean points of 39.00 and interpersonal-social intelligence with mean points of 38.97. Even with the lack of studies about e-sportspeople at this level, studies performed with groups performing and not performing sports found that bodily-kinesthetic intelligence, logical-mathematical intelligence, and interpersonal-social intelligence points were high. Llor et al. (2012) found that logical-mathematical and interpersonal-social intelligence came to the fore among Spanish boys, while interpersonal-social intelligence came to the fore for Spanish girls. The most notable data in this study is that people in the group playing both sports and e-sports had the highest points for all intelligence areas.

In conclusion, the findings indicate that while e-sportspeople demonstrate high proficiency in logical-mathematical, bodily-kinesthetic, and interpersonal domains, traditional athletes excel in bodily-kinesthetic, interpersonal, and intrapersonal intelligence areas. Notably, the group engaged in both disciplines achieved the highest average scores across all intelligence types, suggesting a synergistic effect between physical and digital sports. Should future large-scale studies corroborate these results, Multiple Intelligences Theory could serve as a vital framework for talent identification and vocational guidance in both sporting realms. Furthermore, promoting a cross-disciplinary approach integrating e-sports for traditional athletes and physical sports for e-sportspeople may offer a holistic pathway for cognitive and social development. In an increasingly digitalized era, this research provides a significant reassessment of

the mind-body relationship through the lens of contemporary athletic performance.

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author.

Ethics Committee Approval: The study protocol was in accordance with the Declaration of Helsinki and was approved by the Ethics Committee of İstanbul University-Cerrahpaşa in accordance with international ethical rules (Approval No.: E-74555795-050.01.04-229074; Date: November 5, 2021).

Informed Consent: Written informed consent was obtained from all participants prior to their participation in the study.

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