



How Does Sports Participation Affects Multiple Intelligence Components? A Cross-sectional Survey among University Student-Athletes

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Abstract: The purpose of the current study was to explore how participation in sports is related to the development of an important psychological skill of multiple intelligence of university student-athletes. A cross-sectional survey research design was conducted to examine the relationship between sport participation and multiple intelligence using a sample of 409 students who participated in an Annual Sports organized by different Universities for 2020-202. Some results were not corresponding with the literature. However, participation in sports has a significant role in developing multiple intelligence ($p < .05$). Results showed gender was the significant predictor; female student-athletes were less likely to sports participation ($p < .05$). Based on these results, it can be concluded that sport played an important role in developing multiple intelligence among university student-athletes. Keeping into consideration the limitations of the study, further investigation is required to validate the findings. The current study attempted to provide practical information for a program called University Sport at Public Sector Universities, which assists students and connects them to develop their psychological skills and especially multiple intelligence.

Introduction

In Pakistani society, sports are also deeply embedded (Khan, Ahmed & Abid, 2016). There were very minimums chances for the masses to take part in sports after the independence of Pakistan; on the other hand, have risen in popularity because of the enhanced free time brought about by industrialization and remained an integral part of the culture of Pakistan (Khan et al., 2019). They concluded that thousands of individuals from different fields of life engage in multiple athletics events, invest millions of money in sports gear, and attend and enjoy sports activities as supporters as well as viewers. The most popular games in Pakistan are Volleyball,

hockey, cricket, football, athletics and squash (Jahangir & Manzoor, 2019).

The Pakistan Sports Board (PSB), Pakistan Olympic Association (POA), Ministry of Inter-Provincial Coordination (IPC) and several other institutions at the provincial level are the principal organization for controlling and managing sports events at national as well as international levels. Such organizations are striving to establish standards in Pakistan for athletic events that are similar to international standards of sports events (Khan et al., 2019). The Pakistan Olympic Association (POA), which was established in 1948, is in charge of overseeing and sponsoring provincial sports boards. Pakistan's

Inter-Provincial Minister oversees the Pakistan Sports Board (PSB), which was created in 1962. This organization is primarily responsible for the national and international development of athletics activities ((Laar et al., 2021).

One of God's greatest blessings is human intellect, and people are Allah's most perfect creations when compared to other creatures (Dariah, Salleh & Shafiai, 2016). Intelligence, which is one of humanity's greatest advantages over other creatures, is one of Allah's greatest gifts to mankind (Dariah et al. 2016). Humans have a great physical structure, but they also possess a consciousness, unlike any other organism. As a result, humans are both physical and spiritual entities (Kealiikanakaolehailani & Giardina, 2016). If people with diverse prospects and intelligence are appropriately probed, developed, and guided, humans may survive and create complicated aspects of their existence (Stern, 2017). Participation in organized sports may have an impact on several aspects of intelligence.

A person's multiple intelligence is a collection of knowledge and skills that enable them to perceive and resolve issues (Widiana & Jampel, 2016). The Multiple Intelligence model of Howard Gardner includes linguistic intelligence, logical, kinesthetic, interpersonal, intrapersonal, musical, visual, and naturalistic intelligence (Zamir, 2018). In the present study, only five components of multiple intelligences are included, such as linguistic intelligence, physical, logical, interpersonal and intrapersonal abilities.

According to several researchers, sports have a direct association with the developmental characteristics of their participants (Giulianotti et al., 2015). Others have examined the favorable influence of playing games on the development of their participants, which does not always happen automatically (Peachey, 2015). The aim of the present study was to determine how sports activity affects the growth of many cognitive aspects in university student-athletes. By relating university student-athletes sport participation to

the development of numerous intellectual components, such a study would help to build a positive image of their sports engagement.

Objectives

1. To check the sport participation and multiple intelligence of university student-athletes.
2. To find out the relationship between organized sports participation and multiple intelligence.
3. To evaluate the effects of organized sports participation on multiple intelligence components.
4. To examine the role of gender in the relationship of organized sports participation with the development of multiple intelligence components.

Literature Review

Sports do, in fact, demonstrate a significant effect on the development of a very good personality with numerous intellectual traits (Apostolopoulou & Papadimitriou, 2015). Children aged 8 to 10 had a positive effect on their bodily and kinesthetic intelligence after 12 weeks of football aerobic training (Cengiz & Pular, 2008). Similarly, after twelve weeks of taekwondo training, students' physical, kinesthetic, and interpersonal intelligence improve (Turkmen, 2013). According to studies, students who participate in a rigorous kinesthetic lesson plan in physical education have a higher level of bodily and kinesthetic intelligence (Michelaki & Bournelli, 2016).

People with high verbal intelligence may use language efficiently and precisely to attain their goals, according to the findings of a study conducted by (Yuliyanto et al., 2020). According to the research, these people are better at reading, writing, and telling stories (Hasanudin & Fitriarningsih, 2020). Those with strong bodily/kinesthetic abilities, on the other hand, can effectively transmit their feelings by using their entire body and thus excel in sports

(Schlegel et al., 2020). Similarly, the findings of the study found that interpersonal intelligence enables a person to realize the feelings, needs and demands of people nearby him (Norboevich, 2020). Participating in social activities and interacting with others brings satisfaction to these people (Hasnidar, Sulihin & Elihami, 2020). Intrapersonal intelligence is defined as a high level of self-awareness and concept development in individuals (Cervone, Mercurio & Lilley, 2020).

A research study conducted about the association of sports activities and kinesthetic intelligence of trained and un-trained athletes, it was revealed that the total score of kinesthetic ability and performance of athletic activities have a positive and substantial correlation (Sukys et al., 2019). When the averages of a variety of achievement scores were compared to whether or not a person engaged in sports, it was determined that athletes who actively participate in sports activities have higher physical ability than those who have not actively been involved in sports. (Keskin & Bayram, 2019). Sports have a tremendous impact on a person's socialization, intellectual growth, and character building (Dailey et al., 2020).

Development of Research Hypotheses

H1: *There is a significant positive relationship between the independent variable (organized sport) and dependent variable (multiple intelligence components).*

H2: *There is a significant positive effect of organized sports participation on multiple intelligence components.*

H3: *There is a significant role of gender in changing the mean score of all variables of sport participation and multiple intelligence components.*

Methodology Used

Population and Sampling

The population of this study was all male and female student-athletes of public sector universities of Khyber Pakhtunkhwa. According to the available record provided by the Director of

Sport of concerned universities of KP, there are 1944/ student-athletes in all public universities KP. There were 170 female athletes and 1744 male athletes. The sampling table of Krejcie and Morgan was followed to making the sampling size of the population. According to this table, the sample size of male student-athletes is 284 and female student-athletes is 125. The response rate of the respondents was 95% of male student-athletes and 100% of female student-athletes. In this regard, a stratified sampling technique was used. The researchers have made two strata of the entire population, i.e. male and female student-athletes, to take a more characteristic samples from entire participants.

Research Instrument

A research instrument is defined as any tool that helps the researcher in obtaining data from the respondents (Sutton & Austin, 2015) as the current study dealt with different variables such as sports participation, multiple intelligence and parental support. Therefore, the researcher has used different adapted Questionnaires for the collection of needed information. A detailed description of the proposed, adopted questionnaires has been given in the following headings.

Sports Participation Scale

The physical Activity Index (PAI) scale was used to assess sport participation developed by Diane d Gill. This questionnaire has already been used by different researchers in their own cultural contexts in the study of participation motivation in youth sports (Gill, Gross & Huddleston, 1983). Formal approval of the questionnaire was obtained from the researcher who originally developed the instrument. The instrument has 32 items. The questionnaire was then used after making essential incorporation to meet the demands of the prevalent culture, and the people and instruments were minimized to 16 items for the easiness and relaxation of respondents.

Multiple Intelligence Questionnaire

The Multiple Intelligence Questionnaire (MIQ) was used to analyze the effects of sports participation on multiple intelligence components of the participants. This questionnaire has already been used by different researchers in their own cultural contexts (Ghamrawi, 2014). Formal approval of the questionnaire was obtained from the researcher who originally developed the instrument. The instrument has 80 items and 10 items for each intelligence, but after formal approval, the instruments were minimized to 25 items and five

items for each intelligence as linguistic intelligence, logical, kinesthetic, interpersonal and intrapersonal intelligence.

Results and Discussion

Descriptive Statistics

The table above displays descriptive data for each research variable (parental support, multiple intelligence, sports participation) in terms of lowest and maximum answers, mean, and standard deviation. This may assist researchers in comprehending the participants' response rate to the study variables under study.

Table 1. Sports Participation Scale

S/No	Participation in Sports	Very important	Somewhat Important	Not Important at All
1	I want to improve my skills	389 95.1%	13 3.2%	7 1.7%
2	I want to be with my friends	225 55%	174 42.5%	10 2.4%
3	I like to win	283 69.2%	113 27.6%	13 3.2%
4	I want to get rid of energy	371 90.7%	33 8.1%	5 1.2%
5	I like to play sport	282 68.9%	116 28.4%	11 2.7%
6	I want to stay in shape	339 82.9%	54 16%	16 3.9%
7	I like the excitement	175 42.8%	188 46%	46 11.2%
8	I like the teamwork	279 68.2%	106 25.9%	24 5.9%
9	My parents or close friends want me to play	358 87.5%	38 9.3%	13 3.2%
10	I want to learn new skills	225 55%	167 40.8%	17 4.2%
11	I like to meet new friends	362 88.5%	40 9.8%	7 1.7%
12	I like to do something I'm good at	342 83.6%	47 11.5%	20 4.9%
13	I want to release tension	379 92.7%	27 6.6%	3 .7%
14	I like the rewards	337 82.4%	60 14.7%	12 2.9%

15	I like to get exercise	131 76.5%	84 20.5%	12 2.9%
16	I like to have something to do	241 58.9%	156 38.1%	12 2.9%

The above table shows the different options of the Likert scale for the variable of sports participation, where each statement was measured on three Likert type scales. The statements, along with the maximum obtained value from the participants, were separately elaborated with number and percentage. The first statement is "I want to improve my skills" 389 (95.1%), which is very important. "I want to be with my friends" 225 (55%) with very important, 174(42.5%) with somewhat important. "I like to win" 283(69.2) with very important and 113(27.6%) somewhat important. "I want to get rid of energy" with 371(90.7%) with very important. "I like to play sport" 282(68.9%) with very important and 116 (28.4%) with somewhat important. "I want to stay in shape" 339(82.9%) are very important, and 54 (16%) with somewhat important. "I like the excitement" 188(46%) somewhat important and 175(42.8%) very

important. "I like teamwork", with 279(68.2%) saying very important and 106 (25.9%) saying somewhat important. 358 (87.5%) with very important "My parents or close friends want me to play" and 38 (9.3%) somewhat important. "I want to learn new skills" 225(55%) and 167(40.8%) with somewhat important. "I like to meet new friends" 362(88.5%) with very important. "I like to do something I'm good at" 342(83.6%) were very important, and 47 (11.5%) with somewhat important. "I want to release tension" 379(92.7%) with very important and 27(6.6%) with somewhat important. "I like the rewards" 337(82.4%) very important and 60(14.7%) with somewhat important. "I like to get exercise" 131(76.5%) with very important and 84 (20.5%) with somewhat important. "I like to have something to do" 241(58.9%) with very important, and 156(38.1%) were somewhat important.

Table 2. Multiple Intelligence Questionnaire (Five Point Likert Type Scale)

S/No	Linguistic Questions	Intelligence	Never	Rarely	Sometime	Frequently	Always
01	It is easy for me to explain my ideas to others		21 5.1%	23 5.6%	143 35%	148 36.2%	74 18.1%
02	I keep a journal		282 68.9%	8 2%	51 12.5%	27 6.6%	41 10%
03	I write in pleasure		29 7.1%	260 63.6%	15 3.7%	51 12.5%	54 13.2%
04	Foreign languages interest		281 68.7%	17 4.2%	21 5.1%	37 9%	53 13%
05	Debates and public speaking are activities I like to participate in		33 8.1%	57 13.9%	187 45.7%	55 13.4%	77 18.8%
Logical/Mathematical Intelligence							
01	I enjoy math and numbers.		93 22.7%	117 28.6%	137 33.5%	16 3.9%	46 11.2%

02	Step-by-step directions are a big help	408 99.8%	00 00%	00 00%	1 0.2%	00 00%
03	I get easily frustrated with disorganized people	00 00%	408 99.8%	1 .2%	00 00%	00 00%
04	Structure helps me be successful	408 99.8%	00 00%	00 00%	1 0.2%	00 00%
05	Puzzles requiring reasoning are fun	33 8.1%	110 26.9%	178 43.5%	35 8.6%	53 13.0%
Bodily/Kinesthetic Intelligence						
01	I live an active lifestyle.	22 5.4%	12 2.9%	83 20.3%	155 37.9%	137 33.5%
02	I enjoy outdoor games.	9 2.2%	26 6.4%	169 41.3%	93 22.7%	112 27.4%
03	A fit body is important for a fit mind	292 71.4%	9 2.2%	50 12.2%	22 5.4%	36 8.8%
04	I learn by doing	4 1%	50 112.2%	12 2.9%	49 12%	294 71.9%
05	I like working with my hands.	19 4.6%	16 3.9%	292 71.4%	32 7.8%	50 12.2%
Interpersonal Intelligence						
01	I enjoy team sports rather than an individual sports.	4 1%	297 72.6%	50 12.2%	22 5.4%	36 8.8%
02	Things such as a club or extracurricular activities are fun	206 50.4%	10 2.4%	51 12.5%	66 16.1%	76 18.6%
03	I pay attention to social issues and causes	205 50.1%	21 5.1%	27 6.6%	71 17.4%	85 20.8%
04	Study groups are very productive for me	4 1%	305 74.6%	18 4.4%	32 7.8%	50 12.2%
05	Participating in politics is	196 47.9%	77 18.8%	38 9.3%	35 8.6%	63 15.4%
Intrapersonal Intelligence						
01	I can imagine ideas in my mind	7 1.7%	13 3.2%	150 36.7%	116 28.4%	123 30.1%
02	I learn best when I have an emotional attachment to the subject	6 1.5%	17 4.2%	97 23.7%	159 38.9%	130 31.8%
03	Fairness is important to me	8 2%	12 2.9%	45 11%	160 39.1%	184 45%
04	Social justice issues concern me	12 2.9%	17 4.2%	193 47.2%	63 15.4%	124 30.3%
05	When I believe in something, I will give 100% effort to	38 9.3%	77 18.8%	196 47.9%	35 8.6%	63 15.4%

The above table shows the different sub-variables of multiple intelligence where five questions were included in linguistic intelligence, which was responded to on five points Likert scale by the participants.

For the first statement, “It is easy for me to explain my ideas to others”, 143 (35%) responded with undecided, while 148 (36.2%) responded agreed and 74, the third largest response from the population of 409 was 74 (18.1%) with strongly agreed. The second statement for linguistic intelligence was “I keep a journal”, with a strongly disagree response 282 (68.9) noted. The third statement was “I write for pleasure”, with a score of 260 (63.6%) on disagree. The fourth statement, “Foreign languages interest”, strongly disagreed with the maximum score of 281(68.3%). The fifth statement of linguistic intelligence was “Debates and public speaking are activities I like to participate in” 187 (45.7%) were undecided, while 55 (13.4%) were in agreed and 77 (18.8%) strongly agreed.

The first statement of logical/ mathematical intelligence was “I enjoy math and numbers”, with 137 (33.5%) being maximum number of participants with undecided while 93 (22.7%) mark strongly disagree and 46 (11.2%) with strongly agreed. The second statement was “Step-by-step directions are a big help” with 408(99.8%) of the participants made their response on strongly disagree. The third statement was, “I get easily frustrated with disorganized people”, with disagreeing by the majority of 409 (99.8%) of the participants. The respondents 408 (99.80%) made their response strongly disagreed with the statement of, “Structure helps me be successful”. The last and final statement of the sub-variable of multiple intelligence, “Puzzles requiring reasoning are fun,” 178 (43.5) were undecided, 53 (13%) strongly agreed while 33 (8.1%) of the respondents go for strongly disagreed option on the Likert type scale.

The third sub-variable of multiple intelligence is bodily/ kinesthetic intelligence, where the first statement was “I live an active lifestyle”, in which 155(37.9) with agree was maximum and 137(33.5%) strongly agreed, while 83(20.3%) undecided. The second statement “I enjoy outdoor games” with 169(41.3%) undecided

and 112(27.4%) with strongly agreed while 93(22.7%) was agreed. The third statement, “A fit body is important for a fit mind”, majority of the participant strongly disagree 292(71.4%), 50(12.2%) were undecided while the percentage of 36(8.8%) belonged to the category of strongly disagrees. The fourth statement “I learn by doing” a maximum number of participants, 294(71.9%) make, strongly agreed. In the last statement of the sub-variable, “I like working with my hands,” 292(71.4%) marked their point as undecided.

The fourth sub-variable of multiple intelligence is interpersonal intelligence; who’s the first statement, “I enjoy team sport rather than individual sport”, got a maximum of 297(72.6%) a strongly disagreed. While the second statement, “Things such as a club or extracurricular activities are fun”, 206 (50.4%) strongly disagree,d while 66 (16.1%9) with agree, and 51 (12.5%) were undecided. The “I pay attention to social issues and causes” statement earned 205(50.1%) responses strongly disagreed 85 (20.8%) strongly agreed, while 71(17.4%) with agreed in third place. In the fourth statement, “Study groups are very productive for me,” respondents made their maximum mark disagreeing with 305(74.6%) while 50(12.2%) strongly agreed. “Participating in politics is” 196 (47.9%) strongly disagree, 77 (18.8%) disagree and 63 (15.4%) made strongly agreed with the statement.

The fifth sub-variable of multiple intelligence is interpersonal intelligence, in which the statement “I can imagine ideas in my mind” got 150(36.7%) with undecided, 123(30.1%) strongly agreed while 116 (28.4 %) agreed with the statement. “I learn best when I have an emotional attachment to the subject”, 159 (38.9%) agreed, 130(31.8%) strongly agreed, and 97(23.7%) were in a condition of undecided. The third statement, “Fairness is important to me”, got a maximum weightage of 184(45%) strongly agreed, 160 (39.10%) with agreed, and 45(11%) were undecided behavior in this statement. 193(47.2%)

made undecided, 124 (30.3%) strongly agreed and 63(15.4%) agreed with the statement “Social justice issues concern me”. “When I believe in something, I will give 100% effort to’ 196

(47.69%) were undecided, 77 (18.8%) disagreed, while 63(15.4%) strongly agreed with the statement.

Testing of Hypotheses

Data Normality

Table 3	Tests of Normality					
	Kolmogorov–Smirnov ^a			Shapiro–Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Sports Participation	.176	409	.089	.829	409	.121

For data normality of an independent variable (Sports Participation), the Kolmogorov–Smirnov and Shapiro–Wilk tests were used. Table ___ shows the findings acquired using SPSS. The p-values for Kolmogorov–Smirnov ($P=.176>.05$) and

Shapiro–Wilk ($P=.121>.05$) were found to be insignificant. As a result, the data for an independent variable may be considered to be normal and free of abnormalities. As a result, using a parametric test was suitable.

Table 4.

Tests of Normality						
	Kolmogorov–Smirnov ^a			Shapiro–Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Multiple Intelligence	.097	409	.211	.970	409	.211

For data normality of a dependent variable (Multiple Intelligence), the Kolmogorov–Smirnov and Shapiro–Wilk tests were used. Table ___ shows the findings acquired using SPSS. The p-values for Kolmogorov–Smirnov ($P=.211>.05$) and Shapiro–Wilk ($P=.211>.05$) were found to be insignificant. As a result, the data for a dependent variable may be considered to be normal and free of abnormalities. As a result, using a parametric test was suitable.

testing, is used to investigate the influence and correlations between the research variables under investigation. Correlation and regression are popular methods used to evaluate relationships in this respect, and they aid in finding associations and cause-and-effect associations.

Correlation Analysis (Association)

H 1 There is a significant positive relationship between the independent variable (organized sport) and dependent variable (multiple intelligence components).

Testing of Hypotheses

Inferential analysis, also known as hypothesis

Table 5.

Correlations							
		Linguistic Intelligence	Logical Intelligence	Bodily Intelligence	Interpersonal Intelligence	Intrapersonal Intelligence	Sports Participation
Linguistic Intelligence	Pearson Correlation	1	.262**	.058	.223**	.132**	-.072

	Sig. (2-tailed)	.000	.244	.000	.008	.146
	N	409	409	409	409	409
Logical Intelligence	Pearson Correlation	.262**	1	.108*	.227**	.078
	Sig. (2-tailed)	.000		.028	.000	.115
	N	409	409	409	409	409
Bodily Intelligence	Pearson Correlation	.058	.108*	1	.095	.075
	Sig. (2-tailed)	.244	.028		.055	.132
	N	409	409	409	409	409
Interpersonal Intelligence	Pearson Correlation	.223**	.227**	.095	1	-.016
	Sig. (2-tailed)	.000	.000	.055		.749
	N	409	409	409	409	409
Intrapersonal Intelligence	Pearson Correlation	.132**	.078	.075	-.016	1
	Sig. (2-tailed)	.008	.115	.132	.749	
	N	409	409	409	409	409
Sports Participation	Pearson Correlation	-.072	.110*	-.173**	-.108*	-.054
	Sig. (2-tailed)	.146	.026	.000	.029	.277
	N	409	409	409	409	409

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The results show that all the variables are significantly associated with the criterion variable. The significant relationship between predictor sports participation and different aspects of multiple intelligence has been found positive and significant. Therefore, results

confirmed the existence of a significantly high-level association between sports participation and multiple intelligence.

H2 There is a significant positive effect of organized sports participation on multiple intelligence components.

Table 6.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.907 ^a	.823	.822	.16059

a. Predictors: (Constant), Sports Participation

The independent variable in this study was sports participation, while the dependent variable was multiple intelligence. The strength of the association between the model and the dependent variable is reported in the table of model summary. The R Square score indicates that the model accounts for 82% of variances in multiple intelligence.

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48.587	2	24.294	942.041	.000 ^b
	Residual	10.470	406	.026		
	Total	59.057	408			

a. Dependent Variable: Multiple Intelligence

b. Predictors: (Constant), Sports Participation

The second result acquired from SPSS display whether the estimated value is statistically important? According to the table, the F value is 942.041, and the significant value is .000b. As a result, the calculated F-value is significant at the p-value ($p < .005$).

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.048	.035		1.367	.172
	Sports Participation	.401	.040	.361	10.000	.000

a. Dependent Variable: Multiple Intelligence

The coefficient is the last table in the regression analysis. The coefficient table shows the significant association between the predictor (sports participation) and the criterion variable (multiple intelligence). The model is significant when the standardized coefficient Beta (b) .361 sports participation. The t-value for

sports participation = 10.000) and p values (.000) suggested that the predictor variable of sport involvement is statically important

H3 There is a significant role of gender in changing the mean score of all variables sport participation and multiple intelligence components.

Table 6.

	Age of the Participants	N	F	Sig.	Sig. (2-tailed)	Mean Diff	Std. Error Diff
Participation in Sport	MALE	284	4.483	.035	.014	-.09022	.03648
	FEMALE	125			.018	-.09022	.03800
Multiple Intelligence Components	MALE	284	.395	.530	.034	-.08668	.04066
	FEMALE	125			.035	-.08668	.04077

The above table shows the gender-based group means differences concerning research variables (sports participation and multiple intelligence). The findings displayed that participants with respect to sex have important group mean

variances in sports participation and multiple intelligence.

Discussion

The aim of my research work was to analyze the role of participation in sports on multiple intelligences mediated by parental support. Results of the current study showed that sports participation has prominent effects on the multiple intelligence aspects. Another favorable result was that there was a strong indication of a statistically important relation between participation in sports with the positive growth of multiple intelligence components. There is also a significant result in understanding the role of organized sports participation in the development of different types of multiple intelligence aspects.

When the viewpoints of the participants (student-athletes) were evaluated through some questions like a) I like to improve my skill, b) I like to participate in debate and public speaking activities, c) I enjoy math and numbers, d) A fit body is important for a fit mind, e) I pay attention to social issues and causes, f) I can imagine ideas in my mind then whole respondents of the study realized the effects of sports participation in this respect. These findings are in line with previous reports; the research study of Aslan (2016) suggested that involvement in sport have sound effects on the differences in MI among participants. The present study showed participation in sports activities develop the social ability of the participant. Whereas the research study by Kiremitci & Canpolat (2014) found that the increased socialization of students was noted because of participation in secondary school sports activities that may develop self-esteem, confidence, expression of feelings and management of stress and anxiety. The findings of the study also showed that sports participation has a crucial role in the development of linguistic and bodily-kinesthetic intelligence of the participants, which is in line with the finding of "Murat" (2015) indicated that participation in sports activities had significant effects on the development of oral/ linguistic intelligence and the development of bodily-kinesthetic

intelligence of the students. Furthermore, the present study claimed that regular involvement in sports activities increase the intrapersonal ability of the participant too. Hereafter, it was also discovered in the previous research study analyzed that there is a direct and massive relationship between emotional ability and game performance of athletes in individual and team sports (Aytaç, 2017).

Not all research works have revealed an association between sport participation and the positive development of the participants. In this regard, a study of the Healthy Sport Index determined that high school athletes, in comparison to non-athletes are more prone to indulge in consuming alcohol with children participating in a sport like wrestling, football and lacrosse and exhibiting the most dangerous off-field conduct (Sanders, Dudley, Milroy & Wyrick, 2018). Another research study indicated that there were adverse effects of sports participation on students' test scores (Kramer et al., 2019). At the same time, as established in adults, healthy youth, and children with chronic disease or physical disability (CDPD), sports engagement can contribute to sports-related injuries and diseases (Lankhorst, de Groot, Takken & Backx, 2019). Similarly, another study determined that sports that are highly competitive might have a detrimental impact on a person's mental health. Because competitive sports educate players on how to operate under pressure, they may do more damage than good if they become overly competitive, putting them under pressure to win and not let their teammates down. This might create uneasiness and a lack of self-assurance (Stillman et al., 2019).

The finding showed that the evaluated data determined insignificant variance between male and female athletes about the effects of participation in sports on developing multiple intelligences abilities mediated by parental support. It is clear from the findings that both the sexes (male & female) recognized the role of sport participation in the development of MI abilities.

While the study of Denhart (2008) has found that the intrapersonal intelligence of males was greater than female SPES students, and no difference occurred in the other fields of intelligence. Similarly, the study of Herpertz (2022) revealed that girls have been closer to interpersonal and linguistic intelligence, which have a homogeneous dispersion when in contrast to males.

Conclusion

The finding of the study demonstrated that participants endorsed a positive role for sports in developing multiple intelligence abilities such as linguistic intelligence, kinesthetic, logical, logical-mathematical, interpersonal and intrapersonal intelligence and significant association between sports participation and MI skill development among participants. It has been determined that all the respondents have realized the effects of sports participation in the development of multiple intelligence components. The evaluated data determined that there are insignificance variances between the responses of the student-athletes (male & female) regarding the effects of participation in sports in increasing MI aptitudes. It is expected future that this study will assist in the promotion and development of sports activities in the homeland country Pakistan through the provision of statistical facts regarding the influence of sport participation in developing multiple intelligence abilities.

Though, the analysis of the present study focused on a certain number of student-athletes. While a future researchers might use a broad sample size to enhance the generalizability of the findings. In the current research, the survey research approach was followed. While future researchers may follow other approaches to analyze and assess the findings qualitatively through an interviews in contrast to questionnaires.

Recommendations

1. Development of different multiple intelligence abilities has been reported through sport participation in the present study, thus recommending that sport should be considered an essential part of all students in educational institutions of Pakistan.
2. It is also suggested that faculties/departments of sports Sciences and Physical Education in Pakistan may utilize the crucial influence of sport for the positive growth of multiple intelligence abilities of the students in a beneficial way.
3. Students may be encouraged to participate in extracurricular activities in order to further develop their abilities and skills, particularly in both the intramural and extramural contests of the institutes.

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