



**COMPARISON OF MULTIPLE INTELLIGENCE AND EXERCISE  
PERFORMANCE OF MALE AND FEMALE UNIVERSITY  
STUDENTS IN TAEKWONDO OF TURKEY**

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**Abstract:**

The purpose of this study was to compare the multiple intelligence and sport performance of male and female taekwondo students of Turkish universities. In terms of the purpose of the research it is the applied one and in terms of the type of the method it is comparative and in terms of the method of data collection the research method is a survey one. The statistical population of the present study consisted of female and male Taekwondo students of Turkish universities, in number of 105. Because of the limited sample size of the research, total number (all) is used instead of sampling method. To collect the required data, Gardner's Multiple Intelligence Questionnaire (2004) and a researcher-made exercise performance questionnaire were used. The reliability of the questionnaire was confirmed by the professors. To determine the reliability, the Cronbach Alpha coefficient was used and the reliability coefficient of the multiple intelligence questionnaire was 0.81. SPSS software was used to analyze the data. To analyze data, T test with two independent groups and regression coefficient were used. According to the results, there is a significant difference between the mean scores of multiple intelligence level of male and female taekwondo students. And multiple intelligence and performance of male students are more than girls. The findings of the research showed that multiple intelligence has a significant positive effect on the athletic performance of male and female taekwondo students of Turkish universities.

**Keywords:** multiple intelligence, performance, student, taekwondo

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## 1. Introduction

Taekwondo is one of the most popular sporting disciplines that require certain physical characteristics to succeed. Taekwondo has a special status in advanced levels. In this field, the velocity of motion and reaction, jump strength and anaerobic power along with some pictorial features play an important role in the performance (Arabian Ameri et al., 2011). For the success of the Taekwondo team in international affairs, paying attention to factors affecting the performance of players is very important. Performance can be considered as obtained results. Individually, performance refers to records of a person's success. Performance is what a person holds as a record, irrespective of the purpose. If the performance is defined on the basis of the behavior and the results, then a more comprehensive view can be found about it. Performance means both behavior and results.

Behaviors are caused by a person and transform function from mental to practical (Aremstrang, 2006). Of the many psychological factors that have been studied in recent years by experts, intelligence is of great importance. Sha'bani Bahar et al. (2010) showed that there is a direct and significant relationship between emotional intelligence and sport performance of athletes in individual and group sports. Mohammad Ali (2013) also concluded that there is a significant relationship between multiple types of intelligence with the performance and motivation of soccer players in Khuzestan. Intelligence is considered as one of the significant aspects in human reconciliation with the environment and is one of the important factors in the difference of human beings with each other. The range of intelligence in terms of its constituent factors is the subject that has attracted the attention of the experts in this field. Some is introduced intelligence as a single entity. Others consider it as having numerous components and categories (Hashemi, 2006). Intelligence has many components, some of which are emotional intelligence, social intelligence, business intelligence, emotional intelligence, etc. Each of these intelligences can affect the performance and success of athletes. One of the intelligences that influences athletes' success is the multiple intelligence.

Contemporary psychologist Howard Gardner, for the first time, defined the eight different types of intelligence by defining the intelligence that intelligence is the ability to create effective product, or value service in a culture, by challenging the traditional perception of intelligence. These categories are: verbal-linguistic intelligence, logic-mathematical intelligence, visual-spatial intelligence, motor-physical intelligence, musical intelligence, interpersonal intelligence, intrinsic intelligence and nature-oriented intelligence (Gardner Gardner, 2004). Multiple intelligence is considered as a

philosophy of education in the context of a framework for examining different degrees of intelligence and creating a full range of it. This philosophy emphasizes the content of learning and communication between them. Educational goals should be to prepare students to succeed in school and expand their capacities. In this philosophy, students are told: "*Your capacity is not limited, but you just have to be in your position.*"

Also, this philosophy emphasizes that learning must be compatible with the everyday experiences of people's lives (Til, 2002). Gardner's theory is not necessarily limited to eight intelligences or eight abilities. He believes that there are probably more than eight intelligences, and in one of his works, he has put forward spiritual intelligence and existential intelligence (Woolfleck, 2007). The purpose of the present research is to answer the question, what the difference is between multiple intelligence and athletic performance of male and female taekwondo students in Turkish universities. Safari et al. (2016) conducted a study titled "*comparison of multiple Intelligence among Free-Elite wrestlers and different weight ones*". The results showed that, in all cases, the significance level was increased from 0.05, therefore, there were no significant differences in weight between the verbal, logical / mathematical, spatial, physical/motor and inward aspects of the multiple intelligence of free and extreme wrestlers in groups. But there is a difference between other dimensions, and no difference in lightweight weight groups with a mean weight, but these two groups are different with heavy weight. The results of the research show that individuals in all freelance groups in the field of freedom and infertility differ in their interpersonal intelligence, which, regardless of the effect of heredity on intelligence, exercise program and practice, taking into account individual differences, have a decisive contribution to athletic performance.

Farkhondeh et al. (2015) investigated the relationship between goal orientation and competitive anxiety with the performance of young wrestlers. Results showed that there was a positive and significant relationship between goal orientation and exercise performance. Relationship between goal-oriented and sport performance was positive and significant, but correlation between self-directed and sport performance was not significant. There was a significant and negative relationship between competitive anxiety and sport performance. Logistic regression model showed that except than the self-orientation variable, the other two variables were 76.4% able to predict the variations of the dependent variable. The results showed that in order to improve athletic performance, the athlete's target orientation and their competitive anxiety level should be considered. Erfani (2013) conducted a research titled "*prediction of exercise performance based on exercise drivers and competitive anxiety*" in the Student Taekwondo Olympiad. The results of Pearson correlation coefficient Showed direct relationship

between psychological stress control, rehabilitation, pleasure, challenge, social confirmation, association, competition, medical coercion, disease prevention, good health, weight control, appearance, strength, agility and motivations of taekwondo students. Similarly, there was a significant correlation between the competitive anxiety and the performance of Taekwondo performance. Meanwhile, the results of multiple regression analysis showed that coupling motives, weight control, regeneration and optimal health of 0.611 explain the variance of Taekwondo sport performance and have the ability to predict the performance of Taekwondo performance. So that a standard deviation of the simultaneous change in the sport's motivations would result in 0.390, 0.337, 0.245 and 0.029 standard deviation in the performance of Taekwondo performance. Therefore, it is recommended that Taekwondo coaches increase the motivation of Taekwondo athletes to improve their athletic performance. Sayyed Amri et al. (2013) conducted a study titled "*the relationship between emotional intelligence and sport exercise success of sports athletes*" at the 11th Olympiad of students across the country. The result showed that self-awareness component in the ranking of components of emotional intelligence was in the first priority. Generally, based on the findings of this research, emotional intelligence training is important in individuals, especially athletes, because it can create a balance between athletes' personality and their success and can be useful in predicting the athletic success.

Basharat (2013) made a research explaining the success of sport in group and individual sports in terms of multiple intelligences. The results of this research showed that multiple intelligences have a positive correlation with sport success in group and individual sport. But this variable can only predict sports success only in group sports. Kajbafnejad et al. (2011) concluded in a research entitled "*the relationship between psychoskills, multiple intelligences with exercise motivation*" in male athletes in Shiraz. There was a positive and significant relationship between mental skills and the motivation of sport success. Also, there is a positive and significant relationship between multiple intelligences and the motivation of sport success. Sha'bani (2011) in a study titled "*determining the relationship between interpersonal intelligence and athletic performance in Hamedan province*" concluded that interpersonal intelligence can predict the athlete's athletic performance so that 13% of the performance of the players can be predicted through their interpersonal intelligence. Hagh Negahdar (2012) in a research entitled "Physical-physical intelligence" with sport success in professional and semi-professional athletes in Shiraz concluded that there is a positive and significant correlation between the general scores of motor-physical intelligence and sports athlete's athletic performance. So that motor-physical intelligence has a significant potential for predicting sports success.

Other results from this study showed that there is no significant difference between the mean scores of motor-physical intelligence of boys and girls athletes. Also, there was no significant difference between the mean score of motor-physical intelligence of professional and semi-professional athletes. Abdi et al. (2013) evaluated and analyzed the performance of Iranian athletes in the Summer Olympic Games (London 1948, London 2012). The results of this study showed that athletes' performance in Taekwondo, wrestling and weight training is in the first to third rank. On the other hand, there is a significant relationship between the total medals earned and the number of athletes participating. Sarikaglou and Arkan (2009) concluded negative relationship between the success rate of student test in grammar skills and physical-kinetic, spatial and intrapersonal intelligence, while the relationship between musical intelligence and reading skills was significant and positive. Sing Ball et al. (2011) conducted a research entitled emotional intelligence and athletic performance: Comparison between open-minded and talented athletes. The results showed significant differences in self-analysis, others-analysis, self-expression, thinking, judgment, problem solving, complexity, transitions, openness, self-control among athletes with obvious and limited skills.

Gul (2015) conducted a research on the effect of sport participation on the development of multiple intelligence in high school girl students. The t-test results of this study clearly indicated that participation in sports activities had significant effects on the development of oral intelligence/ linguistics and the development of physical intelligence/ kinesthetics (students), which was also examined through related analysis. In addition, analysis of the relationship showed that there was a significant positive relationship between individual intelligence and sport experience.

## **2. Materials and Methods**

In terms of the purpose of the research, the applied type is comparative in terms of the type of methodology and in terms of the method of data collection is a survey method.

### **2.1 Statistical population, sample size and sampling method**

The statistical population of the present study consisted of male and female students of Turkish universities, whose number is 105. Due to the limited sample size, instead of sampling, a total number of all methods have been used.

## 2.2 Method and tools for collecting data

Collecting the information required for the research, field and was done by referring the students to the campus of the student campus team Turkey. In this research, the performance of one year of taekwondo was considered in different events. The following questionnaires have been used to collect the required data: Multiple Intelligence scores have been extracted from Gardner's Multiple Intelligence Questionnaire (2004). Multiple intelligence contains 80 questions, which are designed in the form of a Likert spectrum and are characterized by very few options to very large. The researcher-made questionnaire was also used to measure the performance of students.

## 2.3 Validity and reliability of the questionnaire

To assess the validity of the questionnaire, the content validity was used, so that the questionnaires were presented to the professors and their opinions about whether the questionnaires were a good tool for measuring the variables were asked to be confirmed by them. Cronbach's alpha coefficient was used to measure the reliability of questionnaires. Cronbach's alpha coefficient for the multiple intelligence questionnaire is 0.81.

## 2.4 Information analysis method

To analyze data, T test was used with two independent groups and regression coefficient.

## 3. Results

**Table 1:** Results for comparing the level of multiple intelligence among male and female students of Taekwondo athletes in Turkish universities

Variable	Sex	N	M	SD	SD err.	T	df	Sig.
Multiple Intelligences	F	45	2.91	0.86	0.20	15.21	103	0.001
	M	60	3.82	0.57	0.16			

The results of Table 1 and considering that the significance level of the test load for the confidence level is 0.95 and less than 0.05, therefore, it can be said that there is a significant difference between the multiple intelligences of male and female students of Taekwondo athletes of Turkish universities. And, the multiple intelligence of Taekwondo boy students is on a higher level than female students' one in Turkish universities.

**Table 2:** Comparing the performance level of male and female students of Taekwondo athletes in Turkey

Variable	Sex	N	M	SD	SD err.	T	df	Sig.
Multiple intelligences	F	45	1.42	1.01	1.41	26.58	103	0.001
	M	60	4.21	0.61	0.73			

The results of Table 2 and considering that the significance level of the test load for the confidence level is 0.95 and less than 0.05, so we can say, there is a significant difference between the performance of male and female students of Taekwondo students in Turkey universities. The performance of male Taekwondo students of Turkish universities is higher than female students.

**Table 3:** Regression coefficients of the effect of multiple intelligence on exercise performance of female taekwondo students

	Predictor variable	R <sup>2</sup>	B	Beta coefficient	T	Sig.
Performance of female taekwondo students	Multiple Intelligence	0.44	0.62	0.53	6.216	0.001

The results of Table 3 show that multiple intelligence has a significant positive effect on the athletic performance of female students of Turkish universities. Thus, with the increase in the level of multiple intelligence, the performance of the female students of the Taekwondo University of Turkish universities also increases. Also, the multiple intelligence of Turkish female university students is 44% predictive of their sporting performance.

**Table 4:** Regression coefficients of the effect of multiple intelligence on the athletic performance of taekwondo boys students

	Predictor variable	R <sup>2</sup>	B	Beta coefficient	T	Sig.
Performance of male taekwondo students	Multiple intelligence	0.62	0.73	0.81	9.47	0.001

The results of Table 4 show that multiple intelligence has a significant positive effect on the athletic performance of the male students of Turkish universities. Thus, with the increase in the level of intelligence, the performance of the male students of the Taekwondo University of Turkish universities also increases. Also, the multiple intelligence of male students of Taekwondo-Turkish universities has the ability to predict 81% of their sports performance.

#### 4. Conclusion

According to the results of the research, there is a significant difference between the mean score of multiple intelligence level among the male and female students of Taekwondo athletes of Turkish universities. So we can conclude with regard to the high mean of boys multiple intelligence of from multiple girls' intelligence, multiple intelligence among Turkish male students is on a higher level than the girls' one.

Findings of the research are non-consistent with the results of the study of the Hagh Negahdar (2012). In his research, he concluded that there was no significant difference between the mean score of motor-physical intelligence of boys and athletes. The difference in the multiple intelligence of male and female students of Taekwondo athletes of Turkish universities on the one hand can be due to the inherent difference between these two sexes in multiple intelligences, and in particular physical intelligence.

The difference in the multiple intelligence of male and female students of Taekwondo University of Turkey on one hand can be due to the inherent difference between these two sexes in multiple intelligences, and in particular physical intelligence. In researches such as Hagh Negahdar research (2012) the physical and emotional intelligence of boys is more than girls and because in sports activities motor-physical intelligence plays an important role in the performance of players. So the difference in this dimension of intelligence can affect the scores of multiple intelligences. Therefore, it is recommended that the sports authorities of Turkish universities carry out scientific studies on improving motor-intelligence among the female taekwondo girls. Also, the factors affecting the increase in motor-intelligence were supported and continuous implementation was done by sports authorities.

According to the results of the research, there is a significant difference between the average performance score of male and female students of Taekwondo athletes of Turkish universities. Therefore, it can be concluded that the sport performance of boys is better than girls' athletic performance due to the higher average score of sport performance in male students than female students of Taekwondo athletes of Turkish universities. Findings of the research are consistent with the results of Eidi et al. (2014). In their research, they conclude that the performance of athletes in Taekwondo ranked first to third. Differences in the performance of male and female students of Turkish-taekwondo students can primarily be attributed to differences in the physical structure of female and male students. The fact is that investing in physical fitness and physical structure of female athletes is lower than males. On the other hand, because of the social structure and norms in society, the freedom of action of female athletes are lower than



of males, which can be an important obstacle to their sports success. The results showed that multiple intelligence has a positive effect on the performance of the students of Taekwondo female students of Turkish universities.

Thus, with the increase in the level of intelligence, the performance of the female students of Turkish universities also increases. The results of the research showed that multiple intelligence has a significant positive effect on the performance of male athletes of Turkish universities. In explaining the results of the research, it can be said that the effect of multiple intelligence on the performance of Taekwondo students of, among boys is more than girls. This difference is primarily due to the difference in multiple intelligence of the female and female students of the Taekwondo team. In other words, since multiple boys' intelligence is more than girls, moreover its impact on sports performance will be even higher. On the other hand, the performance of the boys' *team is more than girls, and simultaneously the changes in multiple intelligence and athletic performance have led to this strong relationship with the boys' team.* Considering the importance of multiple intelligence in athletes' performance, it is recommended that girls who have multiple intelligences should be one of the selection criteria for Taekwondo teams. The results of the research are consistent with the results of the Besharat (2013). In his research, he also shows that multiple intelligence has a positive correlation with sport success in group and individual sports. But this variable can only predict sports success only in group sports. Due to the fact that Taekwondo is a group sport, the results of the research is consistent. The research findings are consistent with the results of Kajbaf Nejad et al. (2011). They also concluded that there is a positive and significant relationship between multiple intelligences and the motivation for sport success. The research findings are consistent with Shabani's research results (2011). He concludes that interpersonal intelligence can predict the athlete's athletic performance so that 13% of the performance of the players can be predicted through their interpersonal intelligence. Of course, in Sha'bani's research, the intensity of the effect is less than the present research. In the present study, the effect of intelligence on performance is more than 40% among girls and more than 60% among boys. The findings of the research are consistent with the results of the research of Hagh Negahdar (2012). In his research, he concluded that there is a positive and significant correlation between the general scores of physical-physical intelligence and the athlete's athletic success. So that motor-physical intelligence has considerable potential in predicting sports success.

Eidi et al. (2014) showed that the performance of athletes in taekwondo, wrestling and weight training is ranked first to third. On the other hand, there is a

significant relationship between the total earned medals and the number of participating athletes.

## 5. Research suggestions

Considering the significant difference in multiple intelligence among male and female students of Turkish universities, it is suggested that psychological experts improve the dimensions of multiple intelligences, especially motor-physical intelligence and logical intelligence among female athletes.

Also, by matching the educational and training needs of female athletes with multiple intelligence capabilities, the conditions necessary to improve multiple intelligence can be provided. Considering the significant difference in the performance of female and male students of Turkish students, it is suggested that more investments should be made on girls' sports. One of the methods of improving the performance of girls and especially taekwondo athletes is to acquire talent in elementary and guidance school and provide the necessary training for girls who are susceptible to taekwondo athletes. Another necessary condition for improving the performance of girls is the use of instructors, who can communicate effectively with girls, and by helping them recognize their mental backgrounds and their multiple intelligence dimensions, they can help their athletic performance. Regarding to the effect of multiple intelligence on performance of female and male students of Turkish taekwondo athletes, it is recommended to use modern methods of multiple intelligence training in accordance with Gardner's theories for athletes. It is recommended to pay more attention to the specific abilities of athletes to provide areas for creativity in sports fields.

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