

# The Correlation between IQ, EQ, Physical Fitness and Athlete Performance

Angga Nugraha, Amung Ma'mun and Yusup Hidayat  
Universitas Pendidikan Indonesia, Jln. Dr. Setiabudhi No. 229 Bandung, Indonesia  
angganugraha@upi.edu

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Abstract: This paper reported a correlational study between IQ, EQ, physical fitness, and athlete performance. The samples were 30 futsal players at SMAN 1 Banjaran, Bandung, West Java. The study was conducted using a survey method. The research instrument were the APM (Advanced Progressive Matrices) test, questionnaires, the bleep test, and the Game Performance Assessment Instrument (GPAI). The results revealed that IQ influenced athlete performance as much as 19.4%. The correlation coefficient between them was 0.441. In other words, IQ and athlete performance was moderately correlated to each other. It was also revealed that EQ influenced performance as much as 21.2%. The correlation coefficient between EQ and performance was 0.460. It means that these two variables were moderately correlated. The results also show that physical fitness influenced performance as much as 14.2%. The correlation coefficient between physical fitness and performance was 0.367. It means that these two variables have low correlation. Meanwhile, there was a strong correlation between IQ, EQ, physical fitness and athlete performance as the observed F value was 4.653 with a significance value as much as  $0.010 < 0.05$ . It means that the null hypothesis was rejected. Put it simply, there was a significant correlation between IQ, EQ, physical fitness and athlete performance.

## 1 INTRODUCTION

To become an athlete needs hard work, to be ready to face hard training, and to prepare physical and mental condition. An athlete also needs to take care of his lifestyle (Informa et al., 2013). The things that needs to be taken into account by an athlete includes training time, meal time and rest time (Lastella, Roach, Halson, and Sargent, 2015) all of those must be kept and organized well. By the application of the above mentioned aspects, it is expected that the athlete can focus on achieving the expected target.

Basically, a futsal athlete is expected to have a good physical fitness, and this will be achieved if the athlete can apply the training program that has been designed or planned well (Woods, McKeown, Keogh, and Robertson, 2017). Physical training must not only be done as a routine but also various and fun. However in futsal, it is not only the physical aspect that may affect, but also the psychological factor of the athlete (Denison and Avner, 2011).

The above shows that there is a reciprocal relationship between the physical and psychological aspects. If the psychological aspect is disturbed, then the physical function will also get disturbed that will

affect the motor skill. The sport achievement does not only depend on the sport technical skills and physical fitness, but also depends on the psychological situations and mental health of the athletes (Baird and McGannon, 2009). The psychological condition can encourage someone to do something, therefore the psychological condition of an athlete shall always be in a good condition, in this case, beside the sport technical skills training, the coach must be able to do psychological approach to the athletes (Denison and Avner, 2011). An athlete who performs physical and technical training continuously without giving the chance to train the thinking process will cause to less developing intellectual activities, therefore there are lots of athletes who make mistakes in training or games (Rabbitt, 1990). For that reason, the intellectual ability, in this case is the Intellectual Quotient (IQ) must have its own attention to achieve maximum result. For an athlete, intelligence is one of the most important factors since the thinking ability (IQ) of an athlete will affect the athlete's performance (DEXTER, 1999). An athlete is expected to analyse the opponent's game, then think about how to defeat their attack and how to make goals to the opponent's goalpost. This must be done quick and precise by the

athlete, consequently an athlete must have a good Intellectual Quotient (IQ) (Nettelbeck and Wilson, 2005). An athlete is expected to know the strength and weakness of the opponent, hence the intelligence level of the athlete really plays a huge role in determining the winning and success (Flynn and Weiss, 2007).

Beside the IQ (Intelligence Quotient), the EQ (Emotional Quotient) is also important to be taken into consideration since one's intellectual ability or thinking ability will naturally develop in accordance with his growth (Croston, 2013). The ability to think is one of the factors in decision making when doing various physical activities.

Other factors of the learning or training results other than IQ is the emotional quotient skill (EQ). This became important since EQ (Emotional Quotient) can affect the behaviour of an athlete (Friesen et al., 2013), that is why an athlete must be able to receive, assess, process, and control his emotion as well as the emotion of people around him (Seal and Andrews-Brown, 2010). An athlete who has a good Emotional Quotient (EQ) will be able to think more effectively so that the athlete can be aware of and process his emotion, have the sensitivity toward others' emotion, respond and negotiate with other people emotionally as well as using the emotion as a tool to motivate himself (Juravich and Babiak, 2015). If an athlete has no good emotional quotient (EQ), poor behaviour will be projected by the athlete, for instance, intentionally make fouls and injure opponents and easy to provoke (Boardley and Kavussanu, 2008). Besides, the athlete will always feel right that leads to difficulty to receive advices and inputs from others, work together with the team members, easy to provoke, has no motivation and low empathy (Greenlees, Lane, Thelwell, Holder, and Hobson, 2005).

The explanation above can be one of the causes of a less focused and discipline athlete in understanding the materials that he learns (McCullagh and Wilson, 2007). The lack of ability to understand and perform the instructions can cause the athlete to play poorly so that the performance is not as expected.

Based on the fact and observation in the field, the training process and game result in futsal, the emotional quotient (EQ) shown by the futsal athletes of 1 Banjaran Public High School is relatively varied. The athlete fails to cooperate with other athletes when playing futsal in one team. If an athlete has a poor emotional quotient, the athlete is less able to respect others and the coach as well as other athletes. This will affect the athlete's behaviour and mindset (Proios, 2014). Moreover, other indication is that

there is an athlete with good discipline and also students that fail to follow the rules in the training process, as well as the emotional athlete and often perform aggression to the opponents when competing (Boardley and Kavussanu, 2008). Referring to the above condition, if linked with the aims of the training and competing, to shape qualified and skilled people, then there is something that needs to be taken into consideration and responded by the futsal coaches regarding the IQ and EQ to make a solid teamwork.

An athlete, other than having to have a good IQ (Intelligent Quotient) and EQ (Emotional Quotient), he also needs to have a good physical fitness (Burley, Lenard, and Jr, n.d.), since the physical fitness is the main foundation of an athlete. If someone already has a good physical fitness, he will not get tired easily, this is very important so that the athlete can perform the training activities well. Besides, one with a good physical fitness will be spared from the probability of injury when doing physical activities or heavy sports since the bone and muscles are strong (Kidokoro et al., 2016). Physical fitness is very important because the athlete with good physical fitness will have good muscle strength, metabolism and cardiorespiratory (Stodden, Langendorfer, and Robertson, 2009). Moreover, the athletes with good physical fitness will be able to concentrate and think clearly (Nadig and Sedivy, 2002), different with if the athletes have poor physical fitness. This can cause the athlete to get tired easily and concentration drop so that the emotion of the athletes will become unstable.

Based on the explanation above, it can be described that IQ, EQ and physical fitness relate to the athletes performance, personally or as a team (Burley et al., n.d.). Therefore, IQ, EQ and Physical Fitness have an important role since they can improve the athletes' performance. Referring to the background of the issues above, the writers are interested in conducting the research on "The Correlation between IQ, EQ, Physical Fitness and Athlete Performance".

## 2 METHODS

The sampling technique used in this research is saturation sampling with the total of 30 futsal athletes at 1 Banjaran Bandung Public High School. The method used was the survey method consisted of three variables, namely the free variables and bound variables. The free variables in this research were the Intelligence Quotient (IQ), Emotional Quotient (EQ) and Physical Fitness, and the bound variable was the

athletes' performance. The instruments used in this research to test the intellectual intelligence used the APM test that was performed by the guidance and counselling technical performance, Universitas Pendidikan Indonesia, the emotional quotient used the emotional quotient scale, physical fitness used the bleep test, and the performance used the Game Performance Assessment Instrument (GPAI) whose reliability and validity have been tested. To find out

if there is any relation that directly affect the free variables toward the bound variable, it was analysed using the simple correlation (Product Moment Correlation) using SPSS 20.0 software.

### 3 RESULTS

Table 1: Results of the research.

Variable	Model	R	R Square	Adjusted R Square	Std. Error of estimate	
IQ affects athletes' performance	1	441 <sup>a</sup>	194	116	9.17189	
EQ affects athletes' performance	1	460 <sup>a</sup>	212	184	9.07295	
Physical fitness affects athletes' performance	1	376 <sup>a</sup>	142	111	9.46734	
IQ, EQ and Physical Fitness affect athletes' performance	1	591 <sup>a</sup>	349	274	8.55414	
<b>F count</b>						
Variable	Model	Sum of Squares	Df	Mean Square	F	Sig.
IQ affects athletes' performance	1 Regression	568.541	1	568.541	6.758	.015 <sup>a</sup>
	Residual	2355.459	28	84.124		
	total	2924.000	29			
EQ affects athletes' performance	1 Regression	619.083	1	619.083	7.521	.011 <sup>a</sup>
	Residual	2304.917	28	82.318		
	total	2924.000	29			
Physical fitness affects athletes' performance	1 Regression	414.345	1	414.345	4.623	.040 <sup>a</sup>
	Residual	2509.655	28	89.631		
	total	2924.000	29			
IQ, EQ and Physical Fitness affect athletes' performance	1 Regression	1021.495	3	340.498	4.653	.010 <sup>a</sup>
	Residual	1902.505	26	73.173		
	total	2924.000	29			

#### 3.1 Analysis of the Correlation of IQ and Athletes' Performance

In the variable IQ affect the performance in the R Square value of 0.194 correlation value can be interpreted IQ variables affect the performance of 19.4% while the remaining 80.6% (100% -19.4%) influenced other variables beyond IQ variables. While the value of R shows Based on the results of 0.441, meaning the relationship between IQ variables with performance included in the category of being. And for variable IQ affect the performance at can Fcount equal to 6,758 with significance 0,015 <0,05 which mean H0 rejected. This means there is a significant relationship between IQ with the performance of athletes in the field.

#### 3.2 Analysis of the Correlation of EQ and the Athletes' Performance

Based on the result on EQ variable affects the performance, the R Square value resulted is 0,212 which means that the EQ variable affects the performance for 21,2% while the rest is 78,8% (100%-21,2%) affected by other variables other than the EQ variable. Whereas the R value shows the correlation value for 0.460, meaning that the correlation between the EQ variable and the performance are included in average category. And for the EQ variable affects the performance, the Fcount resulted is 7,521 with 0,011 < 0.05 significance which means that the H0 is rejected. It means that there is a significant correlation between the EQ and the athletes' performance.

### 3.3 The Analysis of the Correlation of Fitness and Athletes' Performance on the Field

The fitness variable affects the performance, the R Square resulted is 0.142, meaning that the fitness variable does affect the performance of 14,2%, while the rest is 85,8% (100%-14,2%) affected by other variables other than the fitness variable. Whereas the R value shows the correlation value achieved is 0,367, meaning that the correlation between the fitness variable and the performance is included in low category. And for the result in the fitness category affects the performance, the Fcount resulted is 4,623 with significance of  $0,040 < 0,05$  which means  $H_0$  is rejected. It means that there is a significant correlation between the fitness and performance of the athletes.

### 3.4 Analysis of the Correlation of the IQ, EQ, Physical Fitness and the Performance of the Athletes

The R Square value is used when the free variable only consists of one (commonly called as simple linear regression), while the Adjusted R Square is used when the free variable is more than one. It is because the free variable consists of three, then the Adjusted R Square value resulted is 0,274 which means that the IQ, EQ and physical fitness variables affect the performance for 27,4% while the rest is 72,6% (100%-27,4%) is affected by other variable other than the IQ, EQ and physical fitness variable. Whereas the R value shows the correlation value of 0.591 which means that the correlation between the IQ, EQ and physical fitness variable and the performance is included into the average category. And for the result of the R Square value is used when the free variable only consists of one (commonly called as the simple linear regression), while the Adjusted R Square is used when the free variable is more than one. Since the free variable consists of three then the Adjusted R Square value resulted is 0.274 which means that the IQ, EQ and physical fitness variable affects the performance for 27,4% while the rest is 72,6% (100%-27,4%) is affected by other variable other than the IQ, EQ and physical fitness variable. Whereas the R value shows the correlation value of 0.591 which means that the correlation between the IQ, EQ and physical fitness variable and the performance is included into the average category.

## 4 DISCUSSION

### 4.1 The Correlation of the IQ, EQ and Physical Fitness and the Athletes' Performance

From the proposed hypothesis, there is a significant correlation between the IQ, EQ and Physical Fitness and the athletes' performance, this is proven through the result of the research that IQ, EQ and Physical Fitness affect the performance with Fcount for 4,653 and significance of  $0,010 < 0,05$  which means that  $H_0$  is rejected. It means that there is a significant correlation between the IQ, EQ and Physical Fitness and the athletes' performance.

As explained, IQ, EQ and physical fitness do affect the athletes' performance. The physical activities done regularly correlate with the cognitive performance. The statement above stated that the IQ, EQ and physical fitness give an important role in decision making included in the athletes' performance on the field since futsal is related with lots of people in making decisions on field whether in the game quality or in the winning target of a game.

## 5 CONCLUSIONS

Based on the result of the data analysis and findings in this research, it can be concluded that there is a result of 19,4% percentage which shows that there is a significant correlation between IQ and the athletes' performance. While the R value shows that the correlation value gained is 0,441 which means that between the IQ variable and the performance is included in the average category, whereas the rest for 80,6% (100%-19,4%) is affected by other variables other than the IQ variable. Therefore the percentage value of the correlation between EQ and the athletes' performance is 21,2% which shows that there is a significant correlation between the EQ and the athletes' performance, while the rest for 78,8% (100%-21,2) is affected by other variables other than the EQ variable. And for the percentage of the correlation between the physical fitness and the athletes' performance is 14,2% which shows that there is a significant correlation between the physical fitness and the athletes' performance. While the rest is 85,8% (100%-14,2%) is affected by other variables other than the physical fitness. Whereas the result of the correlation of IQ, EQ and physical fitness and the athletes' performance is proven significant with Fcount as 4,653 and significance of  $0,010 < 0,05$

which means that the H<sub>0</sub> is rejected. This means that there is a significant correlation between the IQ, EQ and physical fitness and the athletes' performance.

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