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Study of emotional intelligence and sports performance

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Abstract
There is a growing interest in emotional intelligence in sport (Meyer and Zizzi, 2007). Recent research found emotional intelligence related to emotions experienced before successful and unsuccessful performance (Lane *et al.,* 2009). Lane *et al.,* 2009 found that emotions correlating with successful performance vigor, happiness, and calmness, whereas emotions associating with poor performance include confusion, depression and fatigue. Emotional intelligence correlated positively with pleasant emotions and negatively with unpleasant emotions. Further, Lane *et al.,* 2009 found emotional intelligence scores correlated with frequent use of psychological skills. Athletes reporting frequent use of psychological skills (Thomas *et al.,* 1999) [5] also appear to report high scores on the self-report emotional intelligence scale (Schutte *et al.,* 1998). Emotional intelligence (EI) has been reported to be more realistic than other measures in evaluating performances in many fields of human activities. However, research evidences reveal that its application to amateur athletes and its possible effectiveness in enhancing sports performances is yet unknown. This study therefore investigated the difference of emotional intelligence level among the university level high and low performing soccer players.

Keywords: Aerobic exercise, physical fitness, cardiovascular system etc.

Introduction

Man is an Animal, but it is different from other animals on account of its Intelligence. So, since the times, man has begun deliberations about himself, the concept of "Intelligence" has been at the center stage. Whole evolutionary history of man is related with the enhanced Intelligence levels, and subsequent changes brought about, in the use of various organs by the Homo Sapien. Till lately it was considered a basisfor standing of an individual. The two letters IQ, standing for Intelligence Quotient, separated two persons forbeing 'capable' and not 'so capable.' But gradually it was observed and realized that higher IQ levels did notguarantee success. And, there are innumerable examples of individuals of moderate IQ levels doing extremely well in their respective fields. It has been proved that our general intelligence and academic success are poor predictors of life success and adjustments and accounts for only 20% of our life success (Goleman, 1995). It is often said that high intelligence may assure the person a top position, but it may not make him a top person. This is true for all spheres of life including sports. Sports, speaking of it in formal sense, are an activity that is governed by a set of rules or customs and often engaged in competitively. The word "Sport" comes from the old French word "desport" meaning "leisure". That is any activity which is performed, either physical or mental, to pass or utilize the spare or extra time available in one's routine. Over the time, it has been observed that sports have its inception in the doing of routine work with interest, in spare time and in a slightly different ways. Right from Athletics to today's computer games, the above fact can be seen and verified. Sports commonly refers to activities where the physical capabilities of the competitor are the role or primary determinant of the outcome, but this term now has also started including mental games like Chess etc. and motor sports where mental capacity or quality of equipment determines the result. The term sports in sometimes extended to encompass all competitive activities in which offense and defense are played, regardless of the level of physical activity. Sports, in today's world have become an integral part of any individual's healthy daily routine. It is part of school curriculum throughout the world. It is an indispensable part of training of all uniformed forces of the world because sports not only helps in physical fitness of a person, but also inculcates in him the qualities of sharing, cooperation and sportsmanship.

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The term "sport" is sometimes extended to encompass all competitive activities, regardless of the level of physical activity. Both games of skill and motor sport exhibit many of the characteristics of physical sports, such as skill and sportsmanship. There are artifacts and ancient structure that suggest that the Chinese engaged in sporting activities as early as 4000 B.C. Gymnastics appears to have been a popular sport in China's ancient past. Monuments to the Pharaohs indicate that a number of sports, including swimming and fishing, were well developed and regulated several thousands of years ago in ancient Egypt. Other Egyptian sports included Javelin, throwing, high jump and wrestling. There are innumerable similar examples associated with prevalence of various different kinds of sports in ancient civilizations, all over the world. Sports became such a prominent part of their culture that the Greeks created the Olympic Games, which in ancient times were held every four years in a small village in the Peloponnesus called Olympia. Sports have been increasingly organized and regulated from the time of the Ancient Olympics up to the present century. Industrialization has brought increased leisure time to the citizens of developed and developing countries, leading to more time for citizens to attend and follow spectator sports, greater participation in athlete activities, and increased accessibility. These trends continued with the advent of mass media and global communication. Professionalism became prevalent, further adding to the increase in sports popularity. Sports has since long been considered a means of identifying the standing of a nation in the world order. The Mega sports events like Olympics and world cups of various sports have become the favorite occasions to show case the sports prowess, other political ideology and the organizational capacity of the country.

The summer Olympics of 1936, held in Germany was the first such event, in the modern times when efforts were made by the Nazi setup, led by Hitler in Germany to propagate their political ideology and show the supremacy of Aryan race through performance of its Athletics in various events.

In the present times, similar efforts were being made by emerging nations like China, to claim their standing in the world through the performance of its Athletes and also through successful organization of Olympics in 2008 and Asiads in 2010. Every nation, big or small tries its best to make itself noticed through such sports events in the world. Even in the past, the rivalry of Cold War Era superpowers USA and USSR was amply reflected in the efforts put in by them at various international events to be one-up from each other. Sports have been an epitome of power and strength.

In ancient India, the tradition of "swaimvar" was a common thing among royalty. Various kinds of Games were devised to test the skill and strength of prospective grooms, and the one who excelled was chosen as the match for the bride. This tradition shows the importance of physical activity, which eventually grew into various forms of sports. Most of the sports of earlier times involved demonstration of strength and skill regarding their daily activities like-Archery, Horse riding, Javelin throw, Sword fighting etc. These activities which were started to bring among the people as sense of competition slowly grew into full-fledged sports, and this is true for almost every sport. Now a days, with the change in life style and general activities of people, it is seen that the nature of sports is also changing. Earlier, sports mostly displayed strength or raw power, as most of the human activities required use of strength of human body. But, gradually as human lifestyle changed, the mere use of body strength has been slowly replaced by various forms of metal activities, and a similar change is being reflected in the emerging new forms of sports. The games like Chess, Cyber games and competition of various robots has now become common.

A deeper investigation into the sporting activities in past, reflects that, there was social segregation with regard to the participation in some particular sports. This evident if a historical look over various such activities in India is taken. Indian society was divided by caste system and had different kinds of activity by different people in the society. It was mostly the upper castes or kshatriyas who were involved in different sports like horse riding, archery, wrestling etc. This aspect has now completely changed with evolution of education system and with various steps taken up for organization and better administration of sports.

Analysis of data
The statistical analysis of the data were collected on Two Hundred Forty subjects (N=240). The subjects were further divided into two groups N = 120 each (i.e., N1=120; High Performance and N2=120; Low Performance). To find out the between-group differences and the difference of emotional intelligence (EI) between the university level high and low performing soccer players the following statistical techniques were employed. The level of p≤0.05 was considered significant.
1. Student's t-test for independent data
2. One way analysis of variance (Anova) Findings

Findings of this study were made in sequence of all the variables namely Maturity, Compassion, Morality, Sociability and Calm Disposition. For each of the chosen variable, the results pertaining to significant difference, if any, between the university levels high and low performing soccer players is presented in following tables:

Table 1: indicates that the mean of high performance and low performance

	High preferences	Low preferences
Sample size	120	120
Arithmetic mean	68.200	64.7250
95% Cl for the mean	66.8153 to 69.5847	62.0001 to 67.4499
Varience	58.6824	227.2599
Standard deviation	7.6604	15.0751
Standard error of the mean	0.6993	1.3762
Mean Difference	3.4750	
Standard deviation	16.2754	
95% Cl	6.4169 to 0.5331	
Test statistic t	2.339*	
Degrees of Freedom (DF)	119	
Two-tailed probability	P = 0.0210	

Table-1 indicates that the mean of high performance and low performance group was 68.20 and 64.72 respectively, whereas the standard deviation (SD) of high performance and low performance group was 7.66 and 15.07 respectively. The computed value of t (=2.339) between high performance and low performance group in maturity was greater than the tabulated t (.o5) (119) (=1.645). Thus it may be concluded that the Maturity found to be statistically significant. As per the study the above remark can be given at 95% probability level. The graphical representation of responses has been exhibited in (Fig. 1).
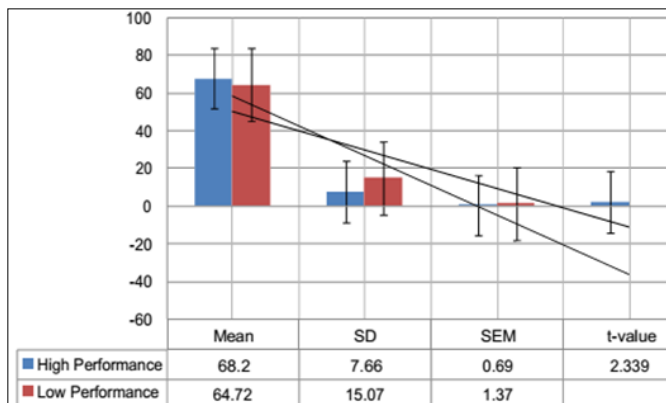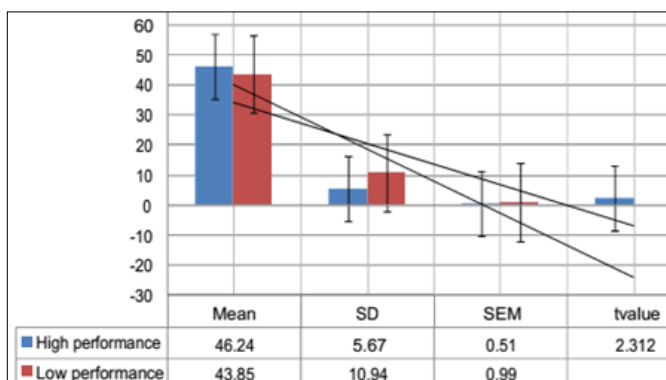
Fig 1: Mean Values (±SD), Standard Error of the Mean and Test Statistic t of Maturity in High Performance Group (N = 120) and Low Performance Group (N = 120)

Table 2: Mean Values (±SD), Standard Error of the Mean and Test Statistic t of Compassion in High Performance Group (N = 120) and Low Performance Group (N = 120)

	High preferences	Low preferences
Sample size	120	120
Arithmetic mean	42.2417	43.8500
95% Cl for the mean	45.2159 to 47.2674	41.8716 to 45.8284
Varience	32.2016	119.7924
Standard deviation	5.6746	10.9450
Standard error of the mean	0.5180	0.9991
Mean Difference		2.3917
Standard deviation		11.3317
95% Cl		4.4400 to 0.3434
Test statistic t		2.312*
Degrees of Freedom (DF)		119
Two-tailed probability		P = 0.0225

Significant at .05 level of significance. Tab t (.o5) (119) = 1.645

Table- 2 indicates that the mean of high performance and low performance group was 46.24 and 43.85 respectively, whereas the standard deviation (SD) of high performance and low performance group was 5.67 and 10.94 respectively. The computed value of t (=2.312) between high performance and low performance group in compassion was greater than the tabulated t (.o5) (119) (=1.645). Thus it may be concluded that the Compassion found to be statistically significant. As per the study the above remark can be given at 95% probability level. The graphical representation of responses has been exhibited in (Fig. 2).
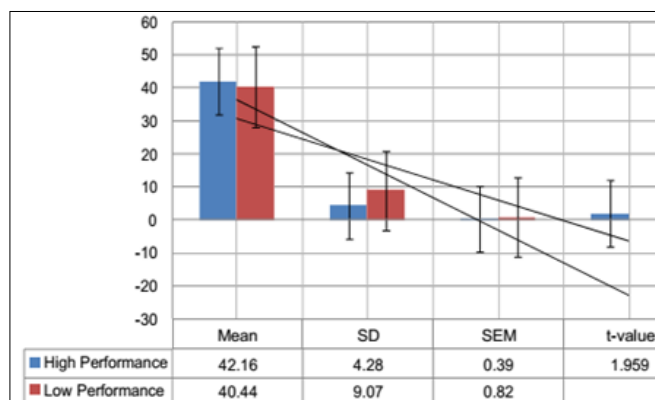

Fig 2: Mean Values (±SD), Standard Error of the Mean and Test Statistic t of Compassion in High Performance Group (N = 120) and Low Performance Group (N= 120)

Table 3: Mean Values (±SD), Standard Error of the Mean and Test Statistic t of Morality in High Performance Group (N = 120) and Low Performance Group (N = 120)

	High preferences	Low preferences
Sample size	120	120
Arithmetic mean	42.1667	40.4417
95% Cl for the mean	41.3929 to 42.9404	38.8019 to 42.0815
Varience	18.3249	82.2991
Standard deviation	4.2808	9.0719
Standard error of the mean	0.3908	0.8281
Mean Difference		1.7250
Standard deviation		9.6449
95% Cl		3.4684 to 0.01839
Test statistic t		1.959
Degrees of Freedom (DF)		119
Two-tailed probability		P = 0.0524

*Significant at .05 level of significance. tab t (.o5) (119) = 1.645

Table- 3 indicates that the mean of high performance and low performance group was 42.16 and 40.44 respectively, whereas the standard deviation (SD) of high performance and low performance group was 4.28 and 9.07 respectively. The computed value of t (=1.959) between high performance and low performance group in morality was greater than the tabulated t (.o5) (119) (=1.645). Thus it may be concluded that the Morality found to be statistically significant. As per the study the above remark can be given at 95% probability level. The graphical representation of responses has been exhibited in (Fig. 3).
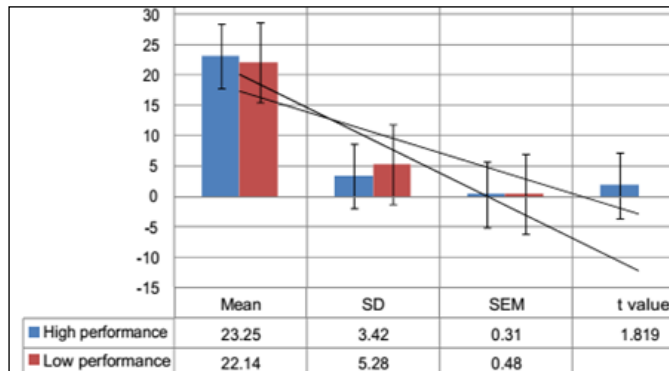

Fig 3: Mean Values (±SD), Standard Error of the Mean and Test Statistic t of Morality in High Performance Group (N = 120) and Low Performance Group (N = 120).

Table 4: Mean Values (±SD), Standard Error of the Mean and Test Statistic t of Sociability in High Performance Group (N = 120) and Low Performance Group (N = 120)

	High preferences	Low preferences
Sample size	120	120
Arithmetic mean	23.2583	22.1417
95% Cl for the mean	22.6386 to 23.8781	21.1857 to 23.0977
Varience	11.7562	27.9714
Standard deviation	3.4287	5.2888
Standard error of the mean	0.3130	0.4828
Mean Difference		1.1167
Standard deviation		6.7266
95% Cl		2.3325 to 0.09921
Test statistic t		1.819*
Degrees of Freedom (DF)		119
Two-tailed probability		P = 0.715

Table- 4 indicates that the mean of high performance and low performance group was 23.25 and 22.14 respectively, whereas the standard deviation (SD) of high performance and low performance group was 3.42 and 5.28 respectively. The computed value of t (=1.819) between high performance and low performance group in sociability was greater than the tabulated t (.o5) (119) (=1.645). Thus it may be concluded that the Sociability found to be statistically significant. As per the study the above remark can be given at 95% probability level. The graphical representation of responses has been exhibited in (Fig. 4).

	Mean	SD	SEM	t value
High performance	23.25	3.42	0.31	1.819
Low performance	22.14	5.28	0.48	

Fig 4: Mean Values (±SD), Standard Error of the Mean and Test Statistic t of Sociability in High Performance Group (N = 120) and Low Performance Group (N = 120).

Discussion of findings

Psychological factors influencing sports performances have long been recognised (Crespo, 2002).

Psychological issues with respect to a variety of sports have also been addressed in a large number of scientific studies which have examined many of the mental characteristics during competition. Over the last two decades sport psychology has contributed to the performance of elite athletes through the implementation and practice of psychological methods–techniques such as: relaxation, goal-setting, mental rehearsal, visualization and self-talk. For the most part, this focus on psychological methods has been more widely considered by examining psychological skills derived from various personality traits and psychological dispositions of elite athletes. There has been a great deal of interest in understanding the relationship of personality variables to sports performance and the bulk of the quantitative research literature has identified a cluster of six broad psychological skill areas linked to effective performance. These include: motivation, self-confidence, arousal and activation, concentration and attentional control, regulation of stress, and coping with adversity (Hardy, Jones & Gould, 1996). Although the findings have been encouraging, questions have been raised in regard to the use of various psychological inventories to identify particular variables and select athletes based on the ability of the inventory to predict success. Despite widespread use of psychological inventories in sports psychology, researchers and practitioners have questioned the utility, validity and appropriateness of certain inventories in the sports context (for e.g., Orlick 1989; Gauvin &Russell 1993; Vanden Auweele *et al.* 1993).

There is a growing interest in emotional intelligence in sport (Meyer and Zizzi, 2007). Recent research found emotional intelligence related to emotions experienced before successful and unsuccessful performance (Lane *et al.,* 2009). Lane *et al.,* 2009 found that emotions correlating with successful performance vigor, happiness, and calmness, whereas emotions associating with poor performance include confusion, depression and fatigue. Emotional intelligence correlated positively with pleasant emotions and negatively with unpleasant emotions. Further, Lane *et al.,* 2009 found emotional intelligence scores correlated with frequent use of psychological skills. Athletes reporting frequent use of psychological skills (Thomas *et al.,* 1999) [5] also appear to report high scores on the self-report emotional intelligence scale (Schutte *et al.,* 1998). Emotional intelligence (EI) has been reported to be more realistic than other measures in evaluating performances in many fields of human activities. However, research evidences reveal that its application to amateur athletes and its possible effectiveness in enhancing sports performances is yet unknown. This study therefore investigated the difference of emotional intelligence level among the university level high and low performing soccer players.

Analysis of data revealed significant between-group differences for maturity (p=0.0210), compassion (p=0.0225), morality (p=0.0524), sociability (p=0.0715) and calm disposition (p=0.0620). These findings substantiate the assertion of (Hanin, 1997; Jones, 2003) that emotions can fluctuate between performances experience both positive and negative emotions. In reviewing emotions and their impact on sports performance, Botterill and Brown (2002) contend that athletes should critically reflect on their own emotional experiences. Further, Hanin (2000) suggests participants need to develop skills in order to recognize and manage their emotions. It could be argued that the evidence presented above closely aligns with the construct of emotional intelligence. Considering that the construct of emotional intelligence is defined as the ability to perceive, monitor, employ, and manage emotions, it is necessary to assess the relationship between emotional intelligence and the regulation of emotion(s). Indeed, research has found that emotional regulation can lead to optimal performance states (e.g. Totterdell & Leach, 2001). Thus, it comes as no surprise that researchers have begun to explore the utility of emotional intelligence in sport (Meyer, Fletcher, Kiltie, &Richburg, 2003; Meyer & Fletcher, 2007; Meyer & Izzy, 2007; Izzy, *et al.,* 2003).

In conclusion, emotional intelligence is an important construct and its efficacy in sport should be further examined.

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