



Evaluation of skill-related physical fitness components of cricketers at different level of competition

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Abstract

The purpose of the study was to compare the skill related physical fitness components of cricket players at different level of competition. A group of 40 subjects aged 21-28 years participated in the study. The purposive sampling technique was used to attain the objectives of the study. They were further divided into two groups of 20 each (i.e., N₁=20; inter-university and N₂=20; inter-college). The unpaired t-test was applied to find out the significant differences between inter-university and inter-college male cricket players. To test the hypotheses, the level of significance was set at 0.05. The results revealed significant differences between inter-university and inter-college male cricket players on the variables i.e. Reaction Time, Balance Power Speed agility and Coordination and inter-university level players performed better than inter-college players on all the variables.

Keywords: skill-related, physical fitness, cricket, inter-university, inter-college

Introduction

Cricket today is one of the most popular and highly paid sports in the world. Cricket as it is seen today has undergone a tremendous amount of improvement. The performance in most of the sports is determined by such factors as physical fitness, techniques and tactics, though their relative contribution varies from sport to sport (Baker *et al.*, 2008) [1]. In addition of these, other factors like physique, body composition and psychological traits also have an overall effect on the performance (Brechue *et al.*, 2010) [2]. These factors also influence the physical fitness status and technical and tactical capabilities of the sportsman (Carlock *et al.*, 2004) [3]. Of all these factors the most important one that of the physical fitness, as a high level of efficiency in techniques and tactics are also dependent upon physical fitness (Das *et al.*, 2007) [4]. Therefore, it is necessary that during the selection of sportsmen for competition a relatively high weight age should be given to physical fitness (Hopkins and Walker, 1988) [5]. It has been recognized by experts and sports scientists that performance in cricket team game does not directly depend upon the mastery of skills but also on the optimum development of physical, psychological, and physiological capacities of the athletes. The success of an individual depends on his physical potentials (Johnson and Nelson, 1988) [6]. It is said that the champions are born and not to be made. If the right talents for sports are selected on the basis of scientific guidelines at the right age, the chances of achieving excellence in sports increase. The scientific data on champion players have given a tremendous knowledge about the

physiological requirements of the different sport activities (Mal, 1982) [7].

Cricket has been described as an 'interval' sport with both anaerobic and aerobic components (Percival *et al.*, 1982) [8]. At the higher skill levels, technical performance may be limited by physical characteristics as well as physical fitness, and performance characteristics (Saini, 1996; Sidhu and Grewal, 1984) [9, 10]. High level performance in cricket not only requires certain physical qualities like speed, endurance, explosive power, agility, flexibility, strength etc., but also physical structure (Tanaka *et al.*, 2004) [11]. In addition to the techniques and tactics of a player or a team, physical and physiological characteristics help him for his better performance (Uppal, 1980) [12]. Optimal performance now requires a combination of technical and tactical abilities as well as a high degree of physical fitness and as a result this study was conducted with the purpose to compare the physical fitness components of cricket players at different level of competition.

Materials and Methods

Subjects

Forty (N=40) male subjects aged between 21-28 years were selected for this study. The purposive sampling technique was used to attain the objectives of the study. All the subjects, after having been informed about the objective and protocol of the study, gave their consent and volunteered to participate in this study. They were further divided into two groups of 20 each (i.e., N₁=20; inter-university and N₂=20; inter-college).

Table 1: Details of physical fitness components, tests and unit of measurement.

S. No	Physical Fitness Components	Tests	Unit of Measurement
1.	Reaction Time	Nelson hand reaction time test	in 1/10 th of sec
2.	Balance	Stork balance stand test	in 1/10 th of sec
3.	Power	Standing broad jump	Meters

4.	Speed	30 yard dash	in 1/10 th of sec
5.	Agility	Illinois agility test	in 1/10 th of sec
6.	Coordination	Eye hand coordination test	in 1/10 th of sec

Data Analysis

Statistical @ 7.0 software was used in data analysis. Unpaired t-test was used to compare mean values. In all the analyses,

the 5% critical level ($p \leq 0.05$) was considered to indicate statistical significance.

Results

Table 2: Mean, Standard Deviation, Standard Error of the Mean, t-value and p-value of cricket players at different level of competition

Variables	Mean		SD		SEM		t-value	p-value
	Inter-university	Inter-college	Inter-university	Inter-college	Inter-university	Inter-college		
Reaction Time	0.21	0.23	0.023	0.009	0.005	0.002	2.13*	0.0394
Balance	27.45	24.10	5.48	4.81	1.23	1.08	2.05*	0.0469
Power	2.28	2.03	0.31	0.43	0.07	0.09	2.02*	0.0499
Speed	6.72	7.03	0.57	0.28	0.12	0.06	2.09*	0.0425
Agility	6.71	9.24	0.66	1.31	0.14	0.29	7.69*	0.0001
Coordination	22.45	28.75	3.90	3.90	0.87	1.19	4.28*	0.0001

*Significant at 0.05 level, Degree of freedom=38

Reaction Time

Table 2: shows that the mean of reaction time of inter-university and inter-college players was 0.21 and 0.23 respectively, whereas the standard deviation (SD) of reaction time of inter-university and inter-college players was 0.023 and 0.009 respectively. The critical value of t at 95% probability level is much lower (1.697) than the observed value of t (2.13*). The data does suggest that the differences between inter-university and inter-college players in regard to reaction time are significant.

Balance

Table 2: shows that the mean of balance of inter-university and inter-college players was 27.45 and 24.10 respectively, whereas the standard deviation (SD) of balance of inter-university and inter-college players was 5.48 and 4.81 respectively. The critical value of t at 95% probability level is much lower (1.697) than the observed value of t (2.05*). The data does suggest that the differences between inter-university and inter-college players in regard to balance are significant.

Power

Table 2: shows that the mean of power of inter-university and inter-college players was 2.28 and 2.03 respectively, whereas the standard deviation (SD) of power of inter-university and inter-college players was 0.31 and 0.43 respectively. The critical value of t at 95% probability level is much lower (1.697) than the observed value of t (2.02*). The data does suggest that the differences between inter-university and inter-college players in regard to power are significant.

Speed

Table 2: shows that the mean of speed of inter-university and inter-college players was 6.72 and 7.03 respectively, whereas the standard deviation (SD) of speed of inter-university and inter-college players was 0.57 and 0.28 respectively. The critical value of t at 95% probability level is much lower (1.697) than the observed value of t (2.09*). The data does suggest that the differences between inter-university and inter-college players in regard to speed are significant.

Agility

Table 2: shows that the mean of agility of inter-university and inter-college players was 6.71 and 9.24 respectively, whereas the standard deviation (SD) of agility of inter-university and inter-college players was 0.66 and 1.31 respectively. The critical value of t at 95% probability level is much lower (1.697) than the observed value of t (7.69*). The data does suggest that the differences between inter-university and inter-college players in regard to agility are significant.

Coordination

Table 2: shows that the mean of coordination of inter-university and inter-college players was 22.45 and 28.75 respectively, whereas the standard deviation (SD) of coordination of inter-university and inter-college players was 3.90 and 3.90 respectively. The critical value of t at 95% probability level is much lower (1.697) than the observed value of t (4.28*). The data does suggest that the differences between inter-university and inter-college players in regard to coordination are significant.

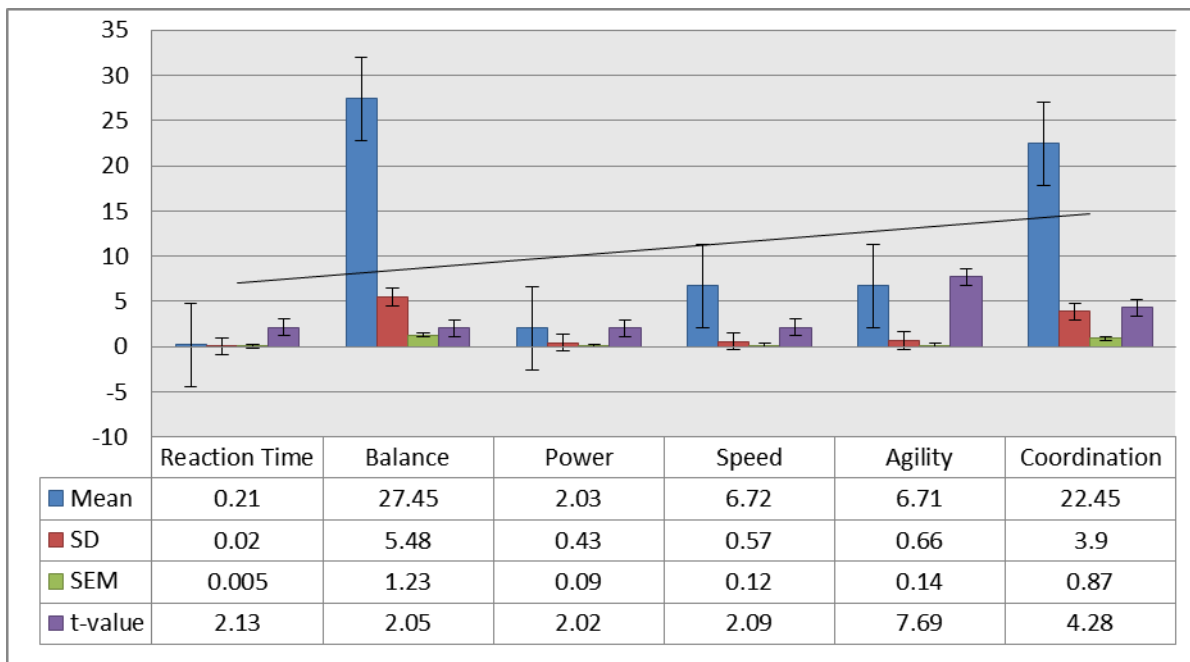


Fig 1: Mean values (\pm SD), standard error of the mean and test statistic t of reaction time, balance, power, speed, agility and coordination in inter-university (N = 20).

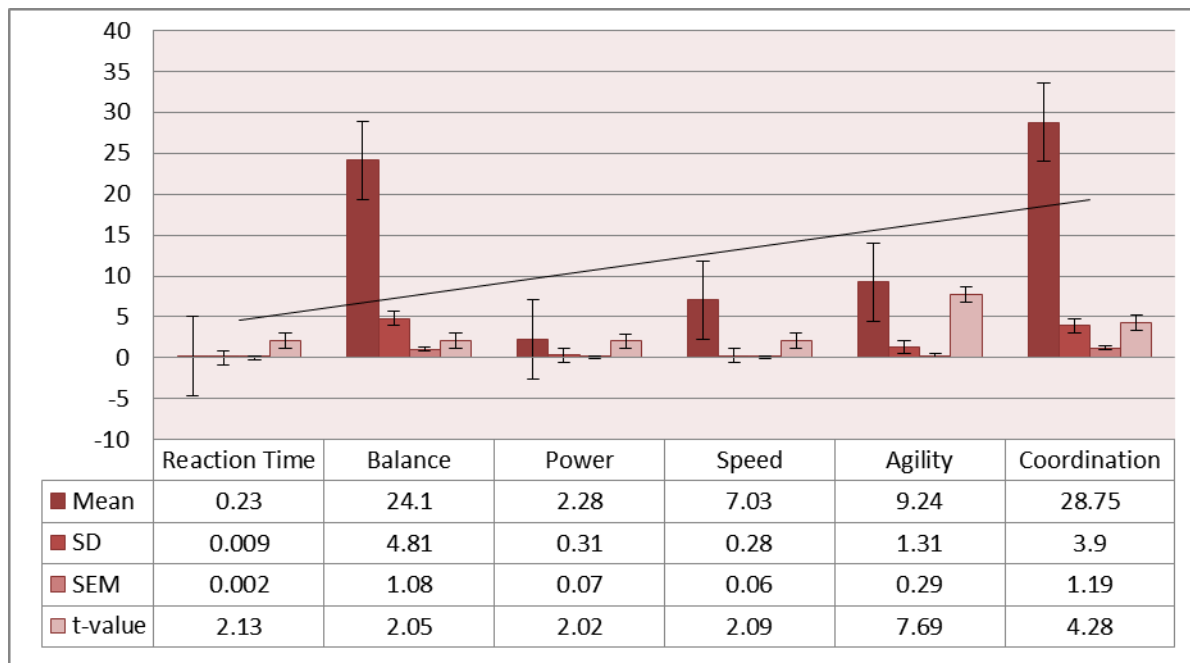


Fig 2: Mean values (\pm SD), standard error of the mean and test statistic t of reaction time, balance, power, speed, agility and coordination in inter-college (N = 20).

Discussion

Since the ancient times, it has been believed that a suitable physique is important to achieve success in particular sports (Powers *et al.*, 1997). Judging the performance of the human body by its size, shape and form has been a topic of great concern. Physical and physiological aspects are essential factors that have contributed to the success of national and international competition in sports. Team cricket, like several other ball games, requires not only technical and tactical skills

but also great deal of physical fitness (Marques, González-Badillo & Kluka, 2006; Marques *et al.*, 2009).

Conclusion

On the basis of the findings, it can be concluded that inter-university players are better in overall skill related physical fitness than their counterpart inter-collegiate as they scored better selected skill related fitness components viz. reaction time, balance, power, speed, agility and coordination.

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References

1. Baker DG, Newton RU. Comparison of Lower Body Strength, Power, Acceleration, Speed, Agility, and Sprint Momentum to Describe and Compare Playing Rank among Professional Rugby League Players. *Journal of Strength and Conditioning Research*. 2008; 22(1):153-158.
2. Brechue WF, Mayhew JL, Piper FC. Characteristics of Sprint Performance in College Football Players. *Journal of Strength and Conditioning Research*. 2010; 24(5):1169-78.
3. Carlock JM, Smith SL, Hartman MJ, Morris RT, Ciroslan DA, Pierce KC, *et al.* The relationship between Vertical Jump Power Estimates and Weightlifting Ability: A Field-Test Approach. *Strength Cond Res*. 2004; 18(3):534-9.
4. Das P, Debnath P, Chatterjee P. Comparative Study of Physical Fitness Components of junior footballers and sprinters of Kolkata. *J Sports & Sports Sci*. 2007; 30(4):35-42.
5. Hopkins WG, Walker NP. The meanings of physical fitness. *Preventive Med*. 1988; 17:764-773.
6. Johnson BL, Nelson JK. Practical measurements for evaluation in physical education (3rd ed.). Surjeet Publ. 1988, 245-246.
7. Mal B. Scoring ability in football. *SNIPES J*. 1982; 22:9.
8. Percival J, Percival L, Taylor J. The complete guide to total fitness. A & C Black Publ. Ltd. 1982, 224.
9. Saini R. Comparative study of psychomotor components between the athletes of individual and team sports. Unpublished Master Thesis. P.U. Chandigarh, 1996.
10. Sidhu LS, Grewal R. Effect of hard training on cardiovascular system of Indian women hockey players. *J Sports Med. Phy. Fitness*. 1984; 24(1):34-40.
11. Tanaka K, Nakamura Y, Sakai T. Role of exercise science in maintaining overall quality of life in humans. *Japan J Phys. Educ. Hlth. Sport Sci*. 2004; 49:209-229.
12. Uppal AK. Effect of 10-weeks participation in physical education programme on selected strength variables in women. *SNIPES*. 1980; 3(3):31-34.