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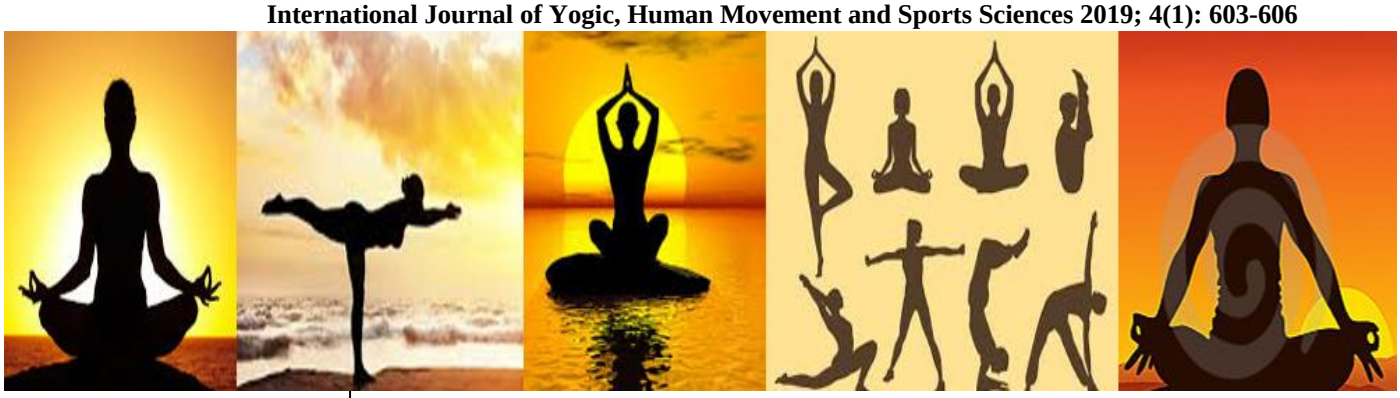

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Motor fitness in relation to performance among cricketers

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Abstract
The present study was designed to compare the level of motor fitness between high and low cricket performers. A sample of one hundred twenty eight (N=128) inter-college level cricketers from the affiliated colleges to Panjab University, Chandigarh was selected for the present study. Out of 128, sixty four each (N=64) were assigned to the high and low level group of cricketers on the basis of their performance in inter-college tournament. The pull-ups, sit-ups, shuttle run (4X10Mts.), standing broad jump, 50 yard dash and 600 yard run/walk tests were employed respectively to examine the information with regard to selected motor fitness components; shoulder strength, abdominal strength endurance, agility, explosive leg power, speed and cardiovascular endurance. The test of significance ('t' test) was used to compare the selected motor fitness components between high and low level cricket performers. Descriptive statistics was also carried out. The level of significance was set at 0.05. The results of the present study indicated that the high level cricket performers were significantly better as compared to their low level counterparts with regard to the overall motor fitness and its components: shoulder strength, abdominal strength endurance, explosive leg power, and cardiovascular endurance. However, low cricket performers had reported better with regard to the motor fitness components; agility and speed as compared to their high performance counterparts.

Keywords: Motor fitness, high, low, cricket performers

Introduction
Cricket is unique sporting discipline as there are three different game formats, namely T20, One Day, and multiple-day (Test and first-class) cricket, in which the physiological demands vary greatly. Johnston and Ford (2010) [5] recommended some guidelines as to what strength and conditioning coaches should concentrate on according to the specific demands of cricket and the associated playing positions. They suggested that strength and conditioning coaches should focus on developing lower-body speed (explosive and repetitive) and anaerobic upper-body power within players after completion of a general training program.
Greater flexibility in the lower lumbar and hamstrings could be needed within the bowling group because of the functional requirements during the delivery stride. It was found that athletes within the study who had engaged in a periodised program achieved superior performance ratings within the sprinting, upper-body power and flexibility assessments in comparison with their peers, thus providing further evidence to the cricket community about the value of a long- term annual periodised program (Johnston & Ford, 2010) [5].
According to the principle of use and disuse suggested by Darwin, active participation in sports and physical exercises helps in toning the muscles and making them strong. This also helps in conserving the energy as lesser energy is spent on performing an activity. An individual performs the exercises without much problems and undue tiredness. Therefore, it is important that young brigade is exposed to the principle of physical exercises and training. The young brigade i.e. the children and adolescents should perform vigorous exercise for an hour or two on routine basis (Astrand *et al*., 2003) [1].
Motor fitness was the ultimate measure of the all the elements of physical fitness. Earlier, a person's physical fitness was measured by the efficiency and duration spent on the work performed. This work could be in an industry, on the fields or on the ground. People might not understand the basic anatomy or physiology of the human body but they could judge and

admire the stupendous exhibition of speed, strength and endurance. While testing motor fitness, one should not forget other significant elements like aggression, swiftness in learning, cooperation and educability (Brock *et al*., 1941) [2].

The human body and the effectiveness with which it functions was probably the most proficient machine ever seen in the history of mankind. Human body was intended for physical performance (Miller & Allen, 1982) [6]. Early men were physical educators. They developed their bodies and could run, jump, climb and throw efficiently. The components of physical fitness that are practiced today existed at that time (Nixon & Cozens, 1966) [7].

The introduction of T-20 format has made the cricket more intensive game. The performance in any sports discipline by and large relies upon the level of motor fitness, one possesses. The cricket is a unique discipline which involves the variety of motor skills. Despite its uniqueness and popularity, the game of cricketer has not been explored substantially in terms of physical fitness, especially in India. Therefore, an attempt has been made by the researchers to compare the level motor fitness between high and low level cricket performers.

Methodology

The present study was designed to compare the level of motor fitness between high and low cricket performers. One hundred twenty eight (N=128) inter-college level cricketers from the affiliated colleges to Panjab University, Chandigarh were selected as subjects for the present study. Out of 128, the subjects were assigned to the high (N=64) and low level (N=64) group of cricketers on the basis of their performance in inter-college tournament by adopting certain criteria. Cricketers who secured positions in the inter college tournament were considered as high performer group whereas the looser of the first round were assigned to the group of low level cricket performers. The pull-ups, sit-ups, shuttle run (4X10Mts.), standing broad jump, 50 yard dash and 600 yard run/walk tests were employed respectively to examine the information with regard to selected motor fitness components; shoulder strength, abdominal strength endurance, agility, explosive leg power, speed and cardiovascular endurance. The test of significance ('t' test) was used to compare the selected motor fitness components between high and low level cricket performers. Descriptive statistics was also carried out. The level of significance was set at 0.05.

Results

Descriptive statistics and significance of mean difference between high and low cricket performers with regard to selected motor fitness components have been presented in table-1.

Table 1: Descriptive statistics and significance of mean difference between high and low cricket performers with regard to selected motor fitness components

Components	Group	N	Mean	SD	MD	SEDM	t-value	p-value (sig)
Shoulder Strength	High Cricket Performer	64	29.95	3.48	4.44	.73	6.10*	.000
	Low Cricket Performer	64	25.56	4.67				
Abdominal Strength Endurance	High Cricket Performer	64	28.08	4.23	2.98	.76	3.91*	.000
	Low Cricket Performer	64	25.09	4.39				
Agility	High Cricket Performer	64	29.89	4.24	4.81	.76	6.31*	.000
	Low Cricket Performer	64	25.08	4.39				
Explosive Leg Power	High Cricket Performer	64	29.22	3.88	4.41	.69	6.40*	.000
	Low Cricket Performer	64	24.81	3.92				
Speed	High Cricket Performer	64	31.42	3.53	3.88	.62	6.25*	.000
	Low Cricket Performer	64	27.55	3.49				
Cardiovascular Endurance	High Cricket Performer	64	30.69	4.70	5.41	.80	6.78*	.000
	Low Cricket Performer	64	25.28	4.31				
Motor Fitness (Overall)	High Cricket Performer	64	180.34	15.0	27.14	2.66	10.20*	.000
	Low Cricket Performer	64	153.20	15.11				

*Significant at 0.05 level

Table-1 indicates that the mean and SD value of high and low cricket performers were 29.95 ± 3.48 and 25.56 ± 4.67 respectively with regard to the motor fitness component; shoulder strength. The mean difference and SEMD were 4.44 and .73 respectively. High and low cricket performers found to be differed significantly (p<0.05) with t-value = 6.10 and p-value (sig.) = .000. While comparing the mean scores of both the groups, it has been observed that the high cricket performers demonstrated significantly better shoulder strength as compared to their low performer counterparts.

The mean and SD value of high and low cricket performers were 228.08 ± 4.23 and 25.09 ± 4.39 respectively with regard to the motor fitness component; abdominal strength endurance. The mean difference and Standard Error Difference of Mean were 2.98 and .76 respectively. Significance difference (p<0.05) was observed between high and low cricket performers as their t-value was 3.91 with p-value (sig.) =.000. While comparing the mean scores of both groups, it has been observed that the high cricket performers demonstrated better abdominal strength endurance as compared to their lower performance counterparts.

Table also shows that the mean and SD value of high and low cricket performers were 29.89 ± 4.24 and 25.08 ± 4.39 respectively with regard to the motor fitness component; agility. The mean difference and Standard Error Difference of Mean were 4.81 and .76 respectively. High and low cricket performers found to be differed significantly (p<0.05) with t-value = 6.31 and p-value (sig.) =.000. While comparing the mean scores of both groups, it has been observed that the less duration in speed signifies the better performance, thus, the lower performers exhibited better agility as compared to their high performance counterparts.

The mean and SD value of high and low cricket performers were 29.22 ± 3.88 and 24.81 ± 3.92 respectively with regard to the motor fitness component; explosive leg power. The mean difference and Standard Error Difference of Mean were 4.41 and .69 respectively. Significance difference (p<0.05) was observed between high and low cricket performers as their t-value was 3.91 with p-value (sig.) = .000. While comparing the mean scores of both groups, it has been observed that the high cricket performers demonstrated better explosive leg power as compared to their low performer

counterparts.

Table-1 also reveals that the mean and SD value of high and low cricket performers were 31.42 ± 3.53 and 27.55 ± 3.49 respectively with regard to the motor fitness component; speed. The mean and Standard Error Difference of Mean were 3.88 and .62 respectively. High and low cricket performers found to be differed significantly (p<0.05) with t-value = 6.25 and p-value (sig.) = .000. While comparing the mean scores of both groups, it has been observed that the less duration in agility indicates better performance, thus, the low performer exhibited better speed as compared to their high performer counterparts.

The mean and SD value of high and low cricket performers were 30.69 ± 4.70 and 25.28 ± 4.31 respectively with regard to the motor fitness component; cardiovascular endurance. The mean difference and Standard Error Difference of Mean were 5.41 and .80 respectively. High and low cricket performers found to be differed significantly (p<0.05) with t-value = 6.78 and p-value (sig.) = .000. While comparing the mean scores of both groups, it has been observed that the high cricket performers demonstrated better cardiovascular endurance as compared to their low performer counterparts.

Table also shows that the mean and SD value of high and low cricket performers were 180.34 ± 15.0 and 153.20 ± 15.11 respectively with regard to the motor fitness (overall). The mean difference and Standard Error Difference of Mean were 27.14 and 2.66 respectively. High and low cricket performers found to be differed significantly (p<0.05) with t-value = 10.20 and p-value (sig.) = .000. While comparing the mean scores of both groups, it has been observed that the high cricket performers demonstrated better as compared to their lower performance counterparts with regard to the motor fitness (overall). The graphical representation of mean scores with regard to the motor fitness components of high and low cricket performers have been presented in figure-1.

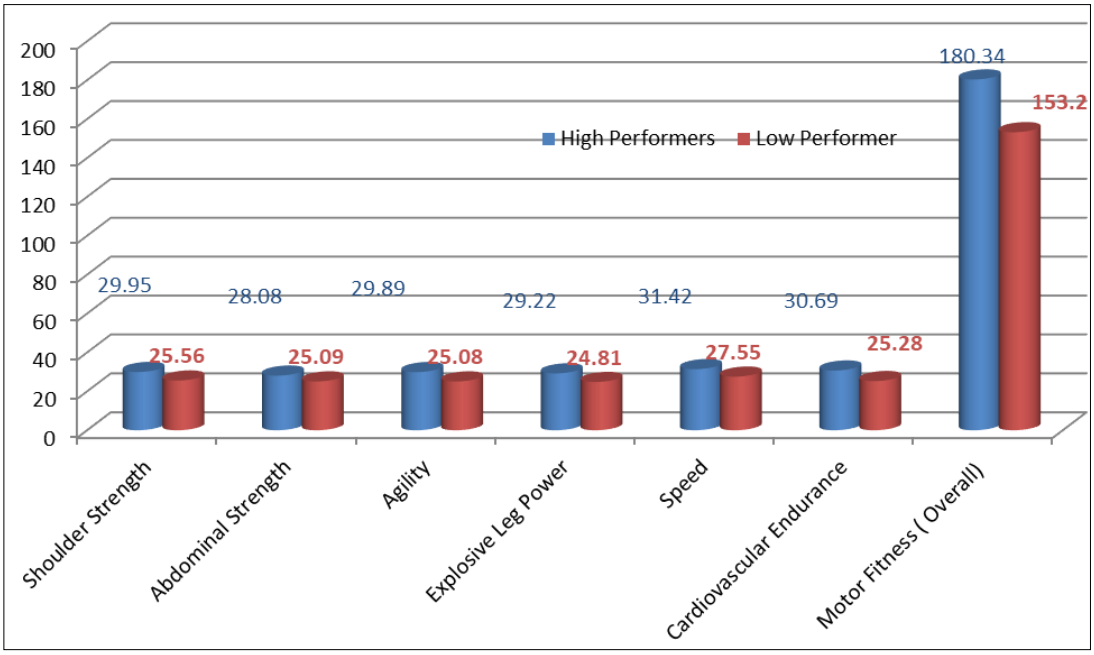

Fig 1: Graphical representation of mean scores with regard to the motor fitness components of high and low cricket performers.

Discussion

The results of the present study indicated that the high level cricket performers demonstrated better with regard to motor fitness (overall) and its components; shoulder strength, abdominal strength endurance, explosive leg power and cardiovascular endurance. However, low cricket performers had reported better agility and speed as compared to their high performance counterparts. The outcomes of the present study might be due to the reason that shoulder strength, abdominal strength endurance, explosive leg power and cardiovascular endurance are prerequisites for any type of motor performance. The better motor fitness facilitates the performance in any type of motor tasks including cricketing skills which found the basis of cricket performance. Hence, the higher level cricket performers possess better motor fitness when compared with their low level counterparts. However, the agility and speed are also indispensible for high level performance in cricket but the results of the present study also explicated the better agility and speed among low level cricket performers when compared with high level counterparts which might be due to the reason that in cricket the aim of speed is not to cover the maximum distance in a shorter period but the ultimate aim is to execute the movements with greater pace which might have influenced the performance of high level cricket performers in speed and agility. The results of the present study are partially in line with results of the study conducted by Goswami and Samraj (2015) [4] which explicated that there is a positive correlation between the explosive power and bowling ability of cricketers. Further, the study concluded that successful performance in cricket bowling requires the ability to generate explosive power. To achieve desired objective researchers showed that bowling ability and explosive power was inter related. Similarly, the findings of present study are supported by the findings of Chandrasekaran *et al*. (2012) [3] which concluded that the playing ability solely depends on the physical fitness, stress free mind more than that it relates the socio-economic status to perform the better strategy of playing games.

Conclusion

It is concluded that better motor fitness was observed among high level cricket performers as compared to their low level counterparts. The better motor fitness signifies the better sports performance among cricketers.

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