

Psychomotor Abilities of Basketball in Different Age Groups: A Comparative Study

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Abstract

The purpose of the study was to compare the psychomotor abilities of basketball players among different age groups. For the purpose of this study 90 basketball players of school level girls from Gujarat states of who participated in inter variety competitions, like state and national Championship and inter-university level in basketball. A total of 90 subjects were selected 30 from each level i.e. Sub-Junior, Junior and Senior. The psychomotor abilities are Kinaesthetic Perception, Speed of Movement and Response Time. To compare the psychomotor abilities of basketball players among different age categories, analysis of Variance (ANOVA) was employed at .05 level of significance. Basketball players were best in kinesthetics perception with performance 1.25. Sub-Junior level Basketball player were observed lowest among the three groups with performance of 1.99 and Junior levels were found better than Sub-Junior level but lesser than national level players in kinesthetic perception. The senior level basketball players were best in speed of movement with performance of 11.71. The performance observed for other groups were Sub-Junior level 8.95, junior level 9.9. The mean performance difference between various groups were found as – 0.52 between sub-junior and junior, 0.57 between sub-junior and senior, 0.03 between junior and senior. Above finding clearly implies that Junior and Senior level Basketball player are significantly better than Sub-Junior level player on response time. However, Junior and Senior players were of equal level.

Objective of Study

The purpose of the study was to compare the psychomotor abilities of basketball players among different age groups.

Methodology

•Subjects

For the purpose of this study 90 basketball players of school level girls from Gujarat states of who participated in inter variety competitions, like state and national Championship and inter-university level in basketball. A total of 90 subjects were selected 30 from each level i.e. Sub-Junior, Junior and Senior:

1. For Sub-Juniors, the age of the subjects was 14 years and below (last day of the year) and upto Index 220.
2. For Juniors, the age of the subjects was 18 years and below (last day of the year) and upto Index 250.
3. For seniors the age of the subjects was above 18 years.

Index formula used in the study was:

Index point = age of years + Height in centimetres + weight in Kg.

•Variables

Keeping the feasibility criterion in mind, especially in the case of availability of instruments, the following psychomotor abilities were selected:

1. Kinaesthetic Perception.

- 2. Speed of Movement.
- 3. Response Time

•Administration of Tests

The necessary data was collected by administering psychomotor abilities tests as suggested by Peter Hirtz (1985).

•Statistical Analysis

To compare the psychomotor abilities of basketball players among different age categories, analysis of Variance (ANOVA) was employed at .05 level of significance.

Table -1
COMPARISON OF KINESTHETIC PERCEPTION AMONG
SUB-JUNIOR, JUNIOR AND SENIOR LEVEL BASKETBALL PLAYERS
(N=90)

Source of Variance	S. S.	d f	M S	F
Between Groups	8.21422	2	4.10711	177.271*
Without Groups	2.01567	87	0.2317	

Tab. F value = 3.101

Table 1 clearly reveals that there is significant difference in kinesthetic perception among three levels of Basketball players i.e. Sub-Junior, Junior and Senior, since the f value observed was 177.27 which is much higher than the criterion value 3.101 required to be significant.

As f value obtained establishes significant differences between groups post hoc mean comparison was made to exactly find the level of difference between the group and status of each group on kinesthetic perception.

The post hoc mean comparison on kinesthetic perception is presented in Table -2

Table -2
LSD TEST FOR MEAN COMPARISON ON KINESTHETICS PERCEPTION
AMONG SUB-JUNIOR, JUNIOR AND SENIOR LEVEL BASKETBALL
PLAYERS (N=90)

SUB-JUNIOR	JUNIOR	SENIOR	D.F.	CD
1.99	1.62		.37*	.078
	1.62	1.25	.74*	
1.99		1.25	.37*	

Post hoc mean comparison reveals significant kinesthetic perception performance differences between the three groups. Since the differences between Sub-Junior and Junior level was .37, between Junior and Senior level was .74,

between Sub-Junior and Senior level was .37 were much higher than the critical difference of .078.

The finding reveals senior level Basketball players were best in kinesthetics perception with performance 1.25. Sub-Junior level Basketball player were observed lowest among the three groups with performance of 1.99 and Junior levels were found better than Sub-Junior level but lesser than national level players in kinesthetic perception.

The finding showed following order of performance:
Senior Group > Junior Group > Sub-Junior Group

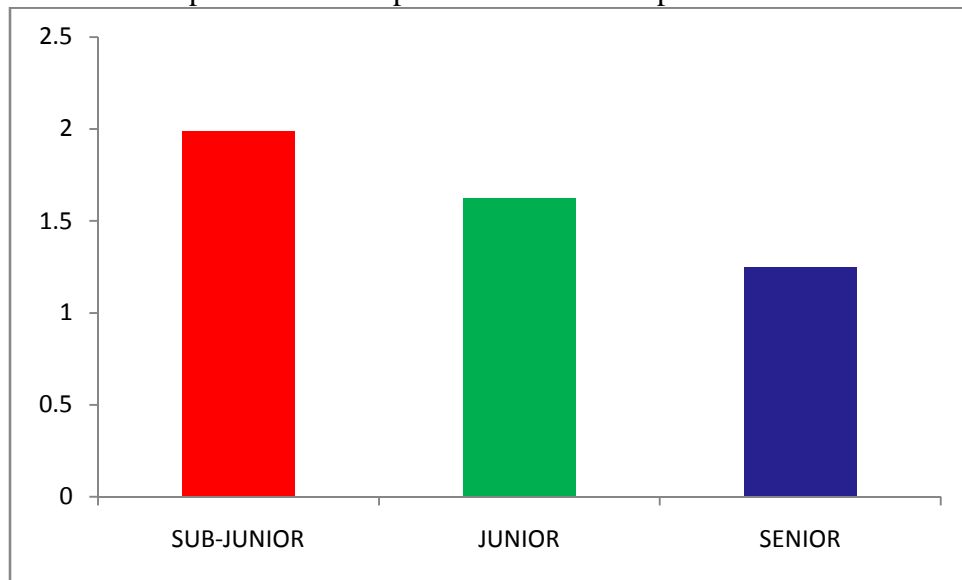


Figure 1: Mean Comparison of Kinesthetic Perception among Senior, Junior and Sub-Junior Level of Basketball Players.

**Table -3
COMPARISON OF SPEED OF MOVEMENT AMONG
SUB-JUNIOR, JUNIOR AND SENIOR LEVEL BASKETBALL PLAYERS
(N=90)**

Source of Variance	S. S.	d f	M S	F
Between Groups	118.2674	2	59.1334	218.678*
Without Groups	23.526	87	0.27041	

Tab. F value = 3.101

It is evident from table 3 that there is significant difference in Speed of Movement among three levels of Basketball players i.e. Sub-Junior, Junior and Senior, since the f value observed was 218.678 is much higher than the criterion value 3.101 required to be significant.

Since the three groups were found significantly different in speed of movement performance. Post hoc mean comparison was used to exactly find the difference as well as standing of the groups in speed of performance.

Post hoc mean comparison on speed of movement is presented in table 4.

Table - 4
LSD TEST FOR MEAN COMPARISON ON SPEED OF MOVEMENT
AMONG SUB-JUNIOR, JUNIOR AND SENIOR LEVEL BASKETBALL
PLAYERS (N=90)

SUB-JUNIOR	JUNIOR	SENIOR	D.F.	CD
8.95	9.9		0.95	0.26
	9.9	11.71	1.81	
8.95		11.71	2.76	

Post hoc mean comparison reveals significant speed of movement performance differences between the three groups. Since the differences between Sub-Junior and Junior level was .95, between Junior and Senior level was 1.81, between Sub-Junior and Senior level was 2.76 were much higher than the critical difference of .26.

The senior level basketball players were best in speed of movement with performance of 11.71. The performance observed for other groups were Sub-Junior level 8.95, junior level 9.9.

The finding showed following order of performance:
 Senior Group > Junior Group > Sub-Junior Group

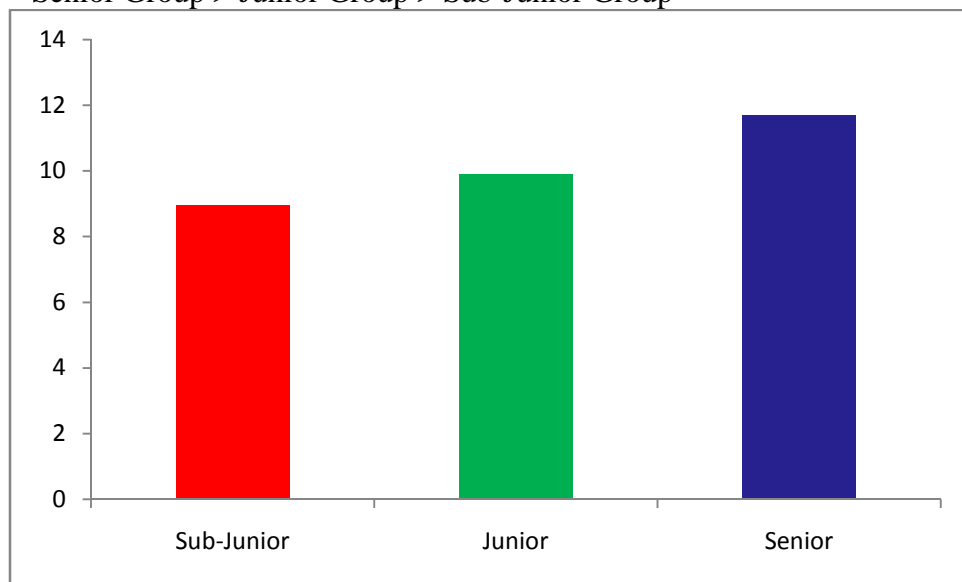


Figure 2: Mean Comparison of Speed of Movement among Senior, Junior and Sub-Junior level of Basketball Players.

Table - 5
COMPARISON OF RESPONSE TIME AMONG SUB-JUNIOR, JUNIOR AND SENIOR LEVEL BASKETBALL PLAYERS (N=90)

Source of Variance	S. S.	d f	M S	F
Between Groups	5.73082	2	2.86541	58.013*
Without Groups	4.29715	87	0.04939	

Tab. F value = 3.101

Table 5 clearly shows that the three levels of Basketball players i.e. Sub-Junior, Junior and Senior are significantly different in response time, since the f value observed was 58.013 is much higher than the criterion value 3.101 required to be significant.

As the f value was found significant post hoc mean comparison was used to exactly find the difference as well as level of difference between the groups.

The post hoc mean comparison in response time is presented in table 6.

Table - 6
LSD TEST FOR MEAN COMPARISON ON RESPONSE TIME AMONG SUB-JUNIOR, JUNIOR AND SENIOR LEVEL BASKETBALL PLAYERS (N=90)

SUB-JUNIOR	JUNIOR	SENIOR	D.F.	CD
3.87	3.35		0.52*	0.1
	3.35	3.32	0.03	
3.87		3.32	0.57*	

Post hoc mean comparison reveals significant response time performance difference between three Basketball groups.

The mean performance difference between various groups were found as – 0.52 between sub-junior and junior, 0.57 between sub-junior and senior, 0.03 between junior and senior.

Above finding clearly implies that Junior and Senior level Basketball player are significantly better than Sub-Junior level player on response time. However, Junior and Senior players were of equal level.

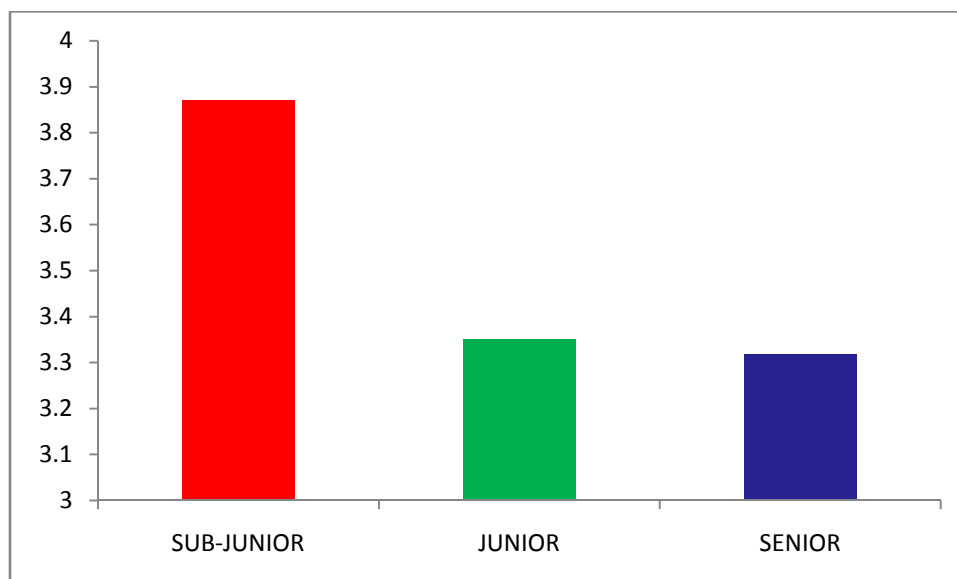


Figure 3: Mean Comparison of Response Time among Senior, Junior and Sub-Junior level of Basketball Players.

- **Conclusion:-**

1. Senior level Basketball players are significantly better in kinesthetic perception than Junior and Sub-Junior level Basketball players, and junior level players are better than Sub-Junior level.
2. Level of speed of movement among Basketball players of senior, Junior and Sub-Junior level significantly diverted. Senior level is best in speed of movement than Junior and Sub-Junior level.
3. Senior level Basketball players are significantly better in response time than Junior and sub-junior level Basketball players and junior level better than sub-junior level

- **References: -**

1. T. Little and AG William, "Effect of Difference Stretching Protocols During Warm-ups on High Speed Motor Capacities in Professional Soccer Players," Journal Strength Conduct Research 2006, 20 (1): 203-7
2. TH Mercer, NP Gleeson & K Wren, "Influence of Prolonged Intermittent High-Intensity Exercise on Knee Flexor Strength in Male and Female Soccer Players", European Journal Applied Physiology 2003 June 89 (5) 506-8.