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Decision making among sprinters, jumpers and throwers

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Abstract

A Cross-Sectional study was conducted on sixteen, male Sprinters, Throwers, and Jumpers (age 21-26 years) from Guru Nanak Dev University, Amritsar, Punjab, India. General Decision-Making Style scale developed by Scot and Bruce (1995) was used to measure decision making of players. A descriptive analysis was used in the first section to describe the data distribution and then hypothesis testing with ANOVA was included in the second section. The data was statistically analyzed using SPSS version 17. Results between male Sprinter, Thrower, and Jumper with regards to variable, Decision Making Style was found to be significant. Whereas "Rational", "Avoidant"

Keywords: Decision Making, sprinters, throwers, jumpers

Introduction

Effective decision-making is a crucial aspect of leadership and plays a pivotal role in achieving organizational goals and driving success. The way leaders make decisions influences the overall direction, performance, and outcomes of an organization. However, decision-making is a complex process that can be influenced by various factors, including the leader's decision-making style^[1, 2, 3]. A decision-making style refers to a leader's habitual approach to making choices and solving problems. Different decision-making styles are characterized by variations in the level of involvement, the consideration of multiple perspectives, the degree of autonomy, and the level of rationality applied^[4, 5]. The choice of decision-making style can significantly impact the quality of decisions made and the overall effectiveness of leadership. Understanding decision-making styles is essential for leaders and organizations to navigate the complexities of the business landscape effectively^[6]. It enables leaders to recognize their preferred decision-making style and consider alternative approaches that may be more suitable for specific situations. Moreover, understanding the impact of decision-making styles on leadership effectiveness can help organizations develop training programs and strategies to enhance decision making capabilities^[7, 8]. Johnson (2006) highlights three characteristics of decision-making in the field of sports. First, he claim that they are naturalistic which means decision-making agents (mainly coaches and athletes) naturally always encounter the decision in sport environment with some degree of task familiarity. The researchers address several important points that the difference between the study of decision making in the laboratory and the "real world" is an important distinction that has only recently been appreciated in decision research^[9]. In addition, as compared to other athletes, these athletes have superior positive thinking capability and decision-making^[10].

Selection of Subjects

A Cross-Sectional study was conducted on sixteen, male Sprinters, Throwers, and Jumpers (age 21-26 years) from Guru Nanak Dev University, Amritsar, Punjab, India. All the subjects were informed about the objective and protocol of the study. Subjects with history of any infective or respiratory ailment condition were excluded from the study. Purposive sampling was used keeping in view of administrative feasibility. The participants participated in the study voluntarily and all the subjects were informed about the objective and protocol of the study.

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The informed consent of participants was conducted or granted in this study. The study protocol was conducted at Department of Physical Education, Guru Nanak Dev University, Amritsar, Punjab, India. Subjects were purposively divided into three groups:

- **Sprinter:** ($N_1=7$).
- **Thrower:** ($N_2=5$).
- **Jumper:** ($N_3=4$).

Selection of Variables

General Decision-Making Style scale developed by Scot and Bruce (1995) was used to measure decision making of players. It measures five aspects of decision-making which are rational, avoidant, intuitive, dependent, and spontaneous. There are five items to access each of the styles. It uses 5-point Likert scale. The respondent is asked to indicate whether he agrees or disagrees with each statement on a 5-point scale ranging from strongly disagree to strongly agree. The five decision-making styles were identified because of factor analysis. The scale was found to be highly reliable (internal) consistency ranging from .68 to .94 (alpha). The GDMS has represented a very good content validity, concurrent validity, and construct validity. All possible decision-making styles were identified from the literature. The items were written specifically to tap behaviors that prior literature suggested would indicate a particular style of decision making. The items were also examined by a number of independent researchers for the appropriateness of the behavior description. Thus, the scale has been judged

to have face validity and logical content validity. The GDMS is a 25-question self-report measure that assesses decision making style. The five styles included on the measure are rational, intuitive, dependent, spontaneous, and avoidant. The GDMS has good validity and reliability ratings. Scott and Bruce (1995) have validated each of the five scales on the GDMS. Internal reliability for the rational scale is reported to be between .77 and .85, the intuitive scale, .78-.84, the avoidant scale, .93-.94, the dependent scale, .68-.86, and the spontaneous scale, .87.

Statistical Techniques

This study's data analysis procedure was divided into two sections

Section 1: A descriptive analysis was used in the first section to describe the data distribution.

Section 2: The hypothesis testing with ANOVA was included in the second section.

The data was statistically analyzed using SPSS (Statistical Package for the Social Sciences) version 17 to draw conclusions. In addition, if the f-value is found to be significant, then least significant difference (LSD) test was applied to find out the direction and degree of difference. For testing hypotheses, the level of significance was set at 0.05.

Results

Table 1: Descriptive analysis between male Sprinter, Thrower, and Jumper with regards to variable, Decision Making Style

Descriptives						
	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Sprinter	7	87.8571	4.29839	1.62464	82.00	93.00
Thrower	5	87.6000	6.65582	2.97658	81.00	98.00
Jumper	4	90.7500	3.77492	1.88746	88.00	96.00
Total	16	88.5000	4.88535	1.22134	81.00	98.00

The descriptive statistics (Mean and S.D) of "Decision Making Style" of Sprinter, Thrower and Jumper male

players were 87.8571 ± 4.29839 , 87.6000 ± 6.65582 and 90.7500 ± 3.77492 , respectively.

Table 2: Analysis of Variance (ANOVA) results between male Sprinter, Thrower, and Jumper with regards to variable, Decision Making Style

ANOVA					
	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	27.193	2	13.596	.534	.598
Within Groups	330.807	13	25.447		
Total	358.000	15			

The ANOVA results for the variable "Decision Making Style" between male Sprinter, Thrower and Jumper male players were statistically significant (P.05). A post-hoc test

was employed to assess the direction and significance of differences between matched means because the resultant F-value (.534) was determined to be significant.

Table 3: Analysis of post-hoc test results between male Sprinter, Thrower and Jumper with regards to variable, Decision Making Style

Multiple Comparisons				
Variables	(J) VAR0002	Mean Difference (I-J)	Std. Error	Sig.
Sprinter (87.8571)	Thrower	.25714	2.95374	.996
	Jumper	-2.89286	3.16179	.667
Thrower (87.6000)	Sprinter	-.25714	2.95374	.996
	Jumper	-3.15000	3.38394	.657
Jumper (90.7500)	Sprinter	2.89286	3.16179	.667
	Thrower	3.15000	3.38394	.657

- Sprinter had a mean value of 87.8571 and Thrower had a mean value of 87.6000. This shows that the Sprinter group performed better than Thrower group on Decision Making Style.
- Sprinter had a mean value of 87.8571 and Jumper had a mean value of 90.7500. This demonstrates that the Jumper group outperformed the Sprinter group in terms of Decision-Making Style.
- The Thrower group had a mean value of 87.6000, whereas Jumper had a mean value of 90.7500. This reveals that the Jumper group outperformed the Thrower group in terms of Decision-Making Style.

Table 4: Descriptive analysis between male Sprinter, Thrower and Jumper with regards to variable, Rational

Descriptives						
	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Sprinter	7	17.0000	3.31662	1.25357	14.00	23.00
Thrower	5	19.6000	3.20936	1.43527	15.00	23.00
Jumper	4	18.0000	.81650	.40825	17.00	19.00
Total	16	18.0625	2.93187	.73297	14.00	23.00

The descriptive statistics (Mean and S.D) of "Rational" of Sprinter, Thrower and Jumper male players were 17.0000±3.31662, 19.6000±3.20936 and 18.0000±.81650, respectively.

Table 5: Analysis of Variance (ANOVA) results between male Sprinter, Thrower, and Jumper with regards to variable, Rational

ANOVA					
	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	19.738	2	9.869	1.175	.340
Within Groups	109.200	13	8.400		
Total	128.938	15			

The ANOVA results for the variable "Rational" between male Sprinter, Thrower and Jumper male players were statistically significant (P.05). A post-hoc test was employed to assess the direction and significance of differences between matched means because the resultant F-value (1.175) was determined to be significant.

Table 6: Analysis of post-hoc test results between male Sprinter, Thrower and Jumper with regards to variable, Rational

Multiple Comparisons				
Variables	(J) VAR00002	Mean Difference (I-J)	Std. Error	Sig.
Sprinter (17.0000)	Thrower	-2.60000	1.69706	.340
	Jumper	-1.00000	1.81659	.861
Thrower (19.6000)	Sprinter	2.60000	1.69706	.340
	Jumper	1.60000	1.94422	.719
Jumper (18.0000)	Sprinter	1.00000	1.81659	.861
	Thrower	-1.60000	1.94422	.719

- Sprinter had a mean value of 17.0000 and Thrower had a mean value of 19.6000. This shows that the Thrower group performed better than Sprinter group on Rational.
- Sprinter had a mean value of 17.0000 and Jumper had a mean value of 18.0000. This demonstrates that the Jumper group outperformed the Sprinter group in terms of Rational.
- The Thrower group had a mean value of 19.6000, whereas Jumper had a mean value of 18.0000. This reveals that the Thrower group outperformed the Jumper group in terms of Rational.

Table 7: Descriptive analysis between male Sprinter, Thrower, and Jumper with regards to variable, Avoidant

Descriptives						
	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Sprinter	7	18.4286	1.81265	.68512	16.00	20.00
Thrower	5	15.8000	2.04939	.91652	14.00	18.00
Jumper	4	17.2500	3.30404	1.65202	15.00	22.00
Total	16	17.3125	2.44182	.61046	14.00	22.00

The descriptive statistics (Mean and S.D) of "Avoidant" of Sprinter, Thrower and Jumper male players were 18.4286±1.81265, 15.8000±2.04939 and 17.2500±3.30404, respectively.

Table 8: Analysis of Variance (ANOVA) results between male Sprinter, Thrower, and Jumper with regards to variable, Avoidant

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	20.173	2	10.087	1.893	.190
Within Groups	69.264	13	5.328		
Total	89.437	15			

The ANOVA results for the variable "Avoidant" between male Sprinter, Thrower and Jumper male players were statistically significant (P.05). A post-hoc test was employed

to assess the direction and significance of differences between matched means because the resultant F-value (1.893) was determined to be significant.

Table 9: Analysis of post-hoc test results between male Sprinter, Thrower and Jumper with regards to variable, Avoidant

Multiple Comparisons						
Variables	(J) VAR00002	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Sprinter (18.4286)	Thrower	2.62857	1.35157	.190	-1.1002	6.3573
	Jumper	1.17857	1.44677	.724	-2.8128	5.1700
Thrower (15.8000)	Sprinter	-2.62857	1.35157	.190	-6.3573	1.1002
	Jumper	-1.45000	1.54842	.654	-5.7218	2.8218
Jumper (17.2500)	Sprinter	-1.17857	1.44677	.724	-5.1700	2.8128
	Thrower	1.45000	1.54842	.654	-2.8218	5.7218

- Sprinter had a mean value of 18.4286 and Thrower had a mean value of 15.8000. This shows that the Sprinter group performed better than Thrower group on Avoidant.
- Sprinter had a mean value of 18.4286 and Jumper had a mean value of 17.2500. This demonstrates that the Sprinter group outperformed the Jumper group in terms of Avoidant.
- The Thrower group had a mean value of 15.8000, whereas Jumper had a mean value of 17.2500. This reveals that the Jumper group outperformed the Thrower group in terms of Avoidant.

Table 10: Descriptive analysis between male Sprinter, Thrower, and Jumper with regards to variable, Intuitive

Descriptives						
	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Sprinter	7	17.1429	2.73426	1.03345	14.00	21.00
Thrower	5	16.6000	3.50714	1.56844	13.00	22.00
Jumper	4	18.0000	2.82843	1.41421	14.00	20.00
Total	16	17.1875	2.85701	.71425	13.00	22.00

The descriptive statistics (Mean and S.D) of "Intuitive" of Sprinter, Thrower and Jumper male players were

17.1429±2.73426, 16.6000±3.50714 and 18.0000±2.82843, respectively.

Table 11: Analysis of Variance (ANOVA) results between male Sprinter, Thrower, and Jumper with regards to variable, Intuitive

ANOVA					
	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	4.380	2	2.190	.241	.789
Within Groups	118.057	13	9.081		
Total	122.437	15			

The ANOVA results for the variable "Intuitive" between male Sprinter, Thrower and Jumper male players were statistically significant (P.05). A post-hoc test was employed

to assess the direction and significance of differences between matched means because the resultant F-value (.241) was determined to be significant.

Table 12: Analysis of post-hoc test results between male Sprinter, Thrower and Jumper with regards to variable, Intuitive

Multiple Comparisons				
Variables	(J) VAR00002	Mean Difference (I-J)	Std. Error	Sig.
Sprinter (17.1429)	Thrower	.54286	1.76454	.954
	Jumper	-.85714	1.88883	.903
Thrower (16.6000)	Sprinter	-.54286	1.76454	.954
	Jumper	-1.40000	2.02153	.790
Jumper (18.0000)	Sprinter	.85714	1.88883	.903
	Thrower	1.40000	2.02153	.790

- Sprinter had a mean value of 17.1429 and Thrower had a mean value of 16.6000. This shows that the Sprinter group performed better than Thrower group on Intuitive.
- Sprinter had a mean value of 17.1429 and Jumper had a mean value of 18.0000. This demonstrates that the Jumper group outperformed the Sprinter group in terms of Intuitive.
- The Thrower group had a mean value of 16.6000, whereas Jumper had a mean value of 18.0000. This reveals that the Jumper group outperformed the Thrower group in terms of Intuitive.

Table 13: Descriptive analysis between male Sprinter, Thrower and Jumper with regards to variable, Dependent

Descriptives						
	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Sprinter	7	17.7143	2.62769	.99317	14.00	22.00
Thrower	5	19.0000	2.34521	1.04881	17.00	22.00
Jumper	4	17.7500	4.42531	2.21265	13.00	22.00
Total	16	18.1250	2.91833	.72958	13.00	22.00

The descriptive statistics (Mean and S.D) of "Dependent" of Sprinter, Thrower and Jumper male players were 17.7143±2.62769, 19.0000±2.34521 and 17.7500±4.42531, respectively.

Table 14: Analysis of Variance (ANOVA) results between male Sprinter, Thrower and Jumper with regards to variable, Dependent

ANOVA					
	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	5.571	2	2.786	.296	.748
Within Groups	122.179	13	9.398		
Total	127.750	15			

The ANOVA results for the variable "Dependent" between male Sprinter, Thrower and Jumper male players were statistically significant (P.05). A post-hoc test was employed to assess the direction and significance of differences between matched means because the resultant F-value (.296) was determined to be significant.

Table 15: Analysis of post-hoc test results between male Sprinter, Thrower and Jumper with regards to variable, Dependent

Multiple Comparisons				
Variables	(J) VAR00002	Mean Difference (I-J)	Std. Error	Sig.
Sprinter (17.7143)	Thrower	-1.28571	1.79507	.778
	Jumper	-.03571	1.92151	1.000
Thrower (19.0000)	Sprinter	1.28571	1.79507	.778
	Jumper	1.25000	2.05652	.833
Jumper (17.7500)	Sprinter	.03571	1.92151	1.000
	Thrower	-1.25000	2.05652	.833

- Sprinter had a mean value of 17.7143 and Thrower had a mean value of 19.0000. This shows that the Thrower group performed better than Sprinter group on Dependent.
- Sprinter had a mean value of 17.7143 and Jumper had a mean value of 17.7500. This demonstrates that the Jumper group outperformed the Sprinter group in terms of Dependent.
- The Thrower group had a mean value of 19.0000, whereas Jumper had a mean value of 17.7500. This reveals that the Thrower group outperformed the Jumper group in terms of Dependent.

Table 16: Descriptive analysis between male Sprinter, Thrower and Jumper with regards to variable, Spontaneous

Descriptives						
	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Sprinter	7	17.5714	2.50713	.94761	14.00	21.00
Thrower	5	16.6000	2.70185	1.20830	14.00	20.00
Jumper	4	19.7500	2.50000	1.25000	17.00	23.00
Total	16	17.8125	2.68871	.67218	14.00	23.00

The descriptive statistics (Mean and S.D) of "Spontaneous" of Sprinter, Thrower and Jumper male players were 17.5714±2.50713, 16.6000±2.70185 and 19.7500±2.50000, respectively.

Table 17: Analysis of Variance (ANOVA) results between male Sprinter, Thrower and Jumper with regards to variable, Spontaneous

ANOVA					
	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	22.773	2	11.387	1.728	.216
Within Groups	85.664	13	6.590		
Total	108.437	15			

The ANOVA results for the variable "Spontaneous" between male Sprinter, Thrower and Jumper male players were statistically significant (P.05). A post-hoc test was employed to assess the direction and significance of differences between matched means because the resultant F-value (1.728) was determined to be significant.

Table 18: Analysis of post-hoc test results between male Sprinter, Thrower and Jumper with regards to variable, Spontaneous

Multiple Comparisons				
Variables	(J) VAR00002	Mean Difference (I-J)	Std. Error	Sig.
Sprinter (17.5714)	Thrower	.97143	1.50309	.814
	Jumper	-2.17857	1.60896	.424
Thrower (16.6000)	Sprinter	-.97143	1.50309	.814
	Jumper	-3.15000	1.72201	.226
Jumper (19.7500)	Sprinter	2.17857	1.60896	.424
	Thrower	3.15000	1.72201	.226

- Sprinter had a mean value of 17.5714 and Thrower had a mean value of 16.6000. This shows that the Sprinter group performed better than Thrower group on Spontaneous.
- Sprinter had a mean value of 17.5714 and Jumper had a mean value of 19.7500. This demonstrates that the Jumper group outperformed the Sprinter group in terms of Spontaneous.
- The Thrower group had a mean value of 16.6000, whereas Jumper had a mean value of 19.7500. This reveals that the Jumper group outperformed the Thrower group in terms of Spontaneous.

Declaration of competing interest.

All authors declare there are no potential financial, personal, or otherwise conflicts of interest.

Conclusion

The study underscores the significance of decision-making styles among athletes, revealing variations across sprinters, throwers, and jumpers. While findings indicate differences in decision-making styles, further research could explore how these styles impact performance outcomes. Understanding and harnessing decision-making styles could enhance athletic training and performance strategies. This study offers valuable insights for coaches and sports professionals seeking to optimize decision-making processes within athletic contexts

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