



# Effects of Contemporary Science and Technology on Performance Evaluation

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## Abstract

A "double-edged sword" is modern science and technology. On the one hand, it not only enhanced competitive sports and continuously produced new sporting goods, but it also enhanced the environment and equipment used for training, supported movement technology, and altered the values associated with sports. Modern technologies, on the other hand, have also aided in the alienation of technology, undermined physical fitness activities, and caused faults in competitive sports that rendered fair competition meaningless and led to a number of unjust social issues. Observing and analyzing player performance, particularly in team-based sports, is challenging due to the intricacy of the constraints that surround it. The absence of standardized observational tools and the urgent need to develop powerful, computerized systems coding are among the key problems in this regard. These problems must all be addressed as part of a strategy that is appropriate for contexts that are natural and normal. Video analysis, notational analysis, and scouting can all be used to evaluate a player's on-court basketball performance during a live game in a natural and ordinary setting. This essay seeks to emphasize the impact of contemporary science and technology on sport, with a focus on performance evaluation.

**Key Words:** *Performance Assessment, Basketball & Modern Science and Technology*

## Introduction

The advancement of modern science and technology is without a doubt "the first Productive force." Sports, a unique social phenomenon, are being used as modern technology accessories. Sport and science and technology are inextricably linked, whether as a result of the rise in competitiveness of sports or the better health of athletes. The terms "Knowledge Sport," "Digital Sports," "High-Tech Olympics," and other phrases all refer to the blending of contemporary technology with sports.

The idea of leveraging the natural advantages, unique training methods, to restrict human movement has long been a dream. The competitive level of current sports, especially high-level sport performance, has been close to the boundaries of natural conditions of humans. The extensive use of modern science and technology in the fields of sports, including computer technology, biological engineering, new materials and energy technology, information technology, and theory, has significantly changed the nature of sports and the training environment for athletes. This has resulted in training methods being updated and site equipment being improved, raising the level of competitive sport and fully demonstrating the wide range of functions and effects of sports.

### Performance Assessment – Team Based Sports

In every country in the world, men and women have participated in basketball, one of the most well-liked team sports. It has been a long-standing phenomenon that has changed over time and has gone hand in hand with the tremendous rise in sports performance over the past 50 years. The study of a game by watching how teams and players behave is not a new phenomenon. The frequency of occurrence of events (such as the number of passes made in a specific region of the field or how frequently a team made a mistake) has historically been employed as a performance indicator in analytical methodologies. This analysis, which is based on the examination of the frequency of specific performance characteristics, has given and will continue to give coaches and athletes crucial information that will help them enhance their training methods. However, the intricacy of constraints that define basketball make it challenging to objectify observation and analysis of the game. The presence of regularities that cannot be seen through inference visual or conventional methods of data analysis, the lack of standardized instruments for observation, and the urgent need to create powerful, computerized systems coding are all significant difficulties in this regard. individuals must be included in a strategy fit for every day, natural situations. Basketball player on-court performance evaluation in real-world, everyday situations can be done by video analysis, notational analysis, and scouting. Basketball can be used to demonstrate a variety of mathematical techniques, such as the ability to recognize geometric shapes, select the appropriate data display and interpret that data, make predictions, create tally charts, scatter plots, and bar graphs, and finally convert fractions to percentages. All of these mathematical techniques are relevant to the statistics used to assess player performance overall and potential performance.

The International Basketball Federation, more commonly known by the French acronym FIBA is an association of national organizations which governs international competition in basketball. It developed a software namely “FIBA Live Stats”, which is used to assesses the performance of the basketball players during the competitions in terms of on-court performance related factors namely: field goal - two-point, three point and free throw basket made & missed, fouls made & received, offensive and defensive rebounds made, blocks made & received, assist, steal, turn over and performance efficiency. The performance of each player was assessed by the sum of the positive and negative aspects of movements executed during the course of the game.

**Table – 1: Performance related factors of Karnataka Basketball Players**

No	Name	Min	Field Goals		2 Points		3 Points		Free Throws		Rebounds			AS	TO	ST	BS	Fouls		+/-	PTS
			M/A	%	M/A	%	M/A	%	M/A	%	OR	DR	TOT					PF	FD		
4	Rini L	11:14	2/7	28.6	1/2	50.0	1/5	20.0	0/0	0.0	1	0	1	5	2	2	0	0	0	1	5
5	Mohanbala .	DNP																			
*6	Chandana	33:55	5/16	31.3	1/6	16.7	4/10	40.0	0/0	0.0	3	3	6	2	1	4	0	3	1	2	14
7	Pavani	03:57	0/0	0.0	0/0	0.0	0/0	0.0	0/0	0.0	0	2	2	0	0	0	0	1	0	-2	0
*8	Mekhala	09:52	0/2	0.0	0/1	0.0	0/1	0.0	0/0	0.0	0	2	2	0	0	0	0	1	1	4	0
9	Grishma	36:37	4/13	30.8	4/8	50.0	0/5	0.0	0/1	0.0	3	1	4	6	3	2	0	1	2	3	8
*10	Loopa	35:52	4/12	33.3	4/5	80.0	0/7	0.0	1/5	20.0	3	4	7	5	3	4	1	1	3	4	9
11	Bhoomika(C)	DNP																			
12	Sahana	12:31	5/9	55.6	5/9	55.6	0/0	0.0	0/0	0.0	2	2	4	0	2	3	0	1	0	4	10
*13	Varsha	32:30	8/20	40.0	8/20	40.0	0/0	0.0	6/7	85.7	3	5	8	3	3	2	0	4	6	7	22
14	Manasa BP	DNP																			
*15	Lekana M	23:32	3/6	50.0	3/5	60.0	0/1	0.0	0/0	0.0	1	7	8	1	3	1	1	5	0	-8	6
Team/Coach											3	5	8		0			0			
Totals		200:00	31/85	36.5	26/56	46.4	5/29	17.2	7/13	53.8	19	31	50	22	17	18	2	17	13	3	74

### Modern Sport Technology in Designing sports Equipment

Sporting technologies are tools created by humans to further interests or objectives in or pertaining to a certain sport. In sports, technology is a technological tool that athletes use to try and improve their practice and competition environments in order to increase their overall athletic performance. It is the understanding and use of specialized tools and the newest technologies to complete tasks more quickly. Golf clubs, tennis rackets, pole vault poles, athletic sports equipment (clothing and footwear), sophisticated computer stimulations, and motion capture are a few examples of sporting technologies. Computerized Software Assessing sports Performance Sporting goods can be improved significantly thanks to technologies like CAD (Computer Aided Design). CAD is largely used to increase the safety, comfort, and effectiveness of specialized sporting equipment.

It provides an excellent method for thinking about and evaluating new goods and concepts. To assess human performance, other technologies can be applied, such as "smart" equipment. These can be utilised by athletes as a part of their training regimen and incorporate sensors and computers as part of its utility. 'Smart' examples Human response time and movement frequency metres, exercise stress testing and cardiovascular assessment equipment, and devices that measure jump and run characteristics are some examples of equipment technologies. Sport performance analysis also uses more recent technologies like motion capture analysis.

## Conclusions

The past millennium has seen a tremendous improvement in sporting performance. It is undeniable that modern designs and building materials have had a significant influence on several sports, even though most of this performance improvement can be attributed to improved training, diet, a desire to win, etc. In a race like the 100-meter sprint, an athlete's strength, power, and determination to win are probably more important than any technological advancement that would call for a change in the rules. When flexible poles were first used in the pole vault in the 1960s, heights rose considerably. Gains have been made here as a result of the athlete's adjustment to the new equipment and the equipment's capabilities. The equipment is accessible to all athletes, and the governing authorities have decided against changing the rules to keep heights low.

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