



# Sports Bio Mechanics



Biomechanics  
All the Right Moves

## **Sports Bio-Mechanics**

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**President**

**Biomechanical Researcher &  
Video Analyst**

**Dr. Joseph Singh**

(Ph.D., M.Phil.)

**Executive Manager**

**Sr. Biomechanical Analyst**

**Dr. Upendra Pandey**

(PhD, M.Phil.)

**Expert**

**Computer Simulation**

**Reg. No. : AAOPQ0723CSD001**

**Central Board of Excise & Custom**



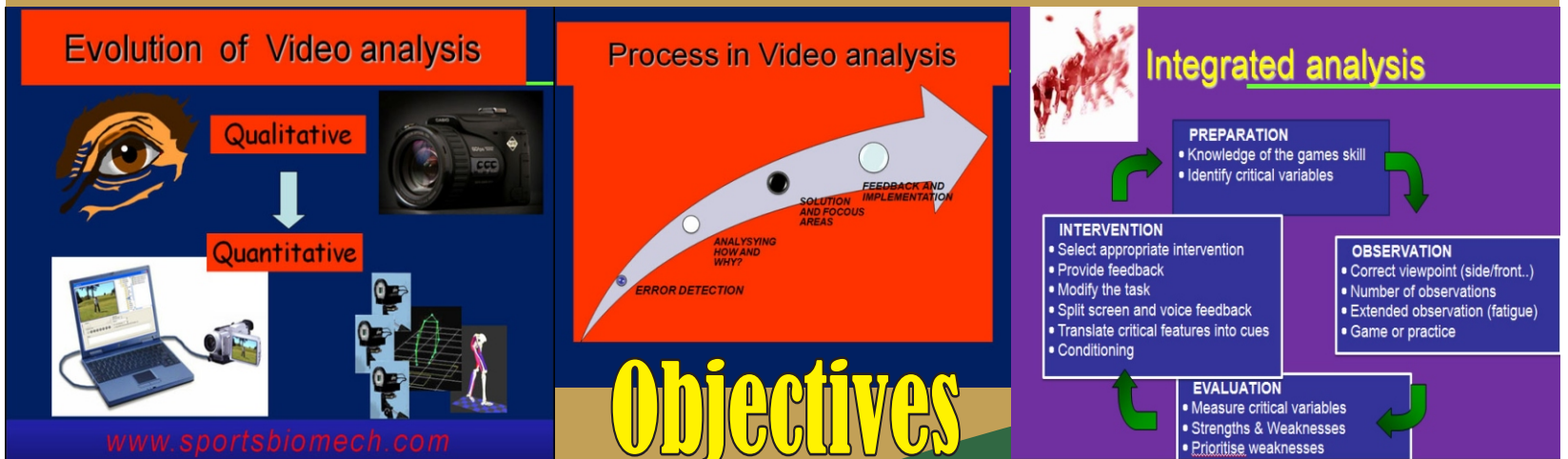
## ΤΦΩΨΧΡΑΡΩΤΧΦ

The continuous scientific advancement in sporting arena has made sports training more purposive, factual and very specific then ever. Sports scientists are leaving nothing to enhance in order to find out the performance enhancing and affecting factor as well as the best result oriented training systems for every sports.

Biomechanics is an applied form of mechanics and consequently the method used to investigate, it must be derived from those of mechanics. However, bio mechanics have not developed in the wake of mechanics but as bordering science in other scientific discipline such as anatomy physiology and technique of sports

We can look at biomechanics as a combination of several different areas of study. This would include anatomy and physio logy, kinematics (the study of motion without regard to its causes), kinesiology (the study of human movement) and kinetics (the study of forces acting on a system).

Understanding biomechanics, human moment and joint function allows the fitness trainer and wellness professional to have a deeper understanding of how to train an athlete or fitness training client



1.To analyze the biomechanical aspects of different sports

2.To evaluate various sporting techniques and changing the technique by biomechanical analysis

3.To develop the criteria of talent selection and development in sports

4.Improvement, Modification , Amendement and Adjustment in Skills and Techniques



### Why use video?

- Visual Medium of Teaching
- Repetitive viewing of skills
- Slow motion possible
- Development of models for comparisons
- Ability to keep records of improvement



# Experts Profile



**Dr. Suhel Raza**

Assistant Professor  
Dept of Physical Education  
P.P.N. College, Kanpur U.P. India

PhD, M.Phil, He is an assistant professor in the Physical Education Department. Received his Professional Education from LNUPE Gwalior in 2005 and his Research Project was in the field of Biomechanics Analysis & Video Analysis. He currently teaches physical education courses and graduate courses in the P.P.N College Kanpur. He has also developed an inquiry based Biomechanical program that focuses on pedagogical issues and technical aspects of different games and sports. He held a position of video analyst in various sports academies for the improvement of techniques and skills of players.



**Dr. Joseph Singh**

Associate Professor  
Dept of Physical Education  
L.C.C. Lucknow U.P. India

PhD, M.P.E from well known institute of physical education (LNUPE), now he is the senior staff in his institute and head of the sports mechanics Kanpur U.P India. He has a keen interest in performance optimization and injury reduction in sport and has published more than 10 refereed articles, 10 refereed conference proceedings, and 2 books in this general area.



**Mr. Arun Singh**

Executive Cricket Expert  
Senior Cricket Coach, S.A.I  
Lakshmibai National Institute of  
Physical Education (Gwalior, M.P)

He is presently working in Sports Authority of India as a senior cricket coach. Having an experience of more than 20 years of coaching and teaching Cricket. He has produced more than a dozen of Ranji trophy Cricket Players, including few internationals like Naman Ojha, Arundhati Kirikire and Bindeshwari Goel. Ankit and Amit Sharma trained by him and they are performing well in IPL. Apart from all this he is accredited level A in coaching from BCCI and actively involved in research and designing performance enhancing programmes for cricketers.



**Dr. Upendra Pandey**

Assistant Professor  
Dept. of Physical Education  
C.S.J.M. University Kanpur U.P. India

PhD M.Phil, Specialized in Sports Biomechanics during his M.Phil course and his Doctoral work in the field of Basketball skills and techniques. Currently he is teaching in teacher training courses for physical education and sports at graduation and post graduation level. Apart from all these he is given his services as a basketball coach of state team in National Games.



**Mr. Prakash Raja**

(Executive Technical Expert)  
Video Analyst  
Cricket Association of Bengal Ranji team & NCA  
Technical Analyst

He has expertise in operating various softwares like motion analysis Software Silicon Coach, match analysis software Analyzer, Score mate and Twenty-Twenty. He was associated with Cricket Association of Bengal Ranji team & NCA for last three years as a video analyst.



# COURSE OF ACTION

## Freeze-Frame & Slow-Motion

Our systems process a full 60 to 1200 frames per second which means you see video images with NO blurring and NO missed movements

## Electronic chalkboard

Our Facilities gives the Coach an electronic chalkboard feature which provides unlimited drawing directly on video frames to help illustrate **motion problems**. Draw shapes, lines, freehand, get line angles displayed and even find out velocity of body and object automatically. There's we have a notepad feature that allows us to enter and store notes along with each video frame being analyzed.

## Direct movement analysis

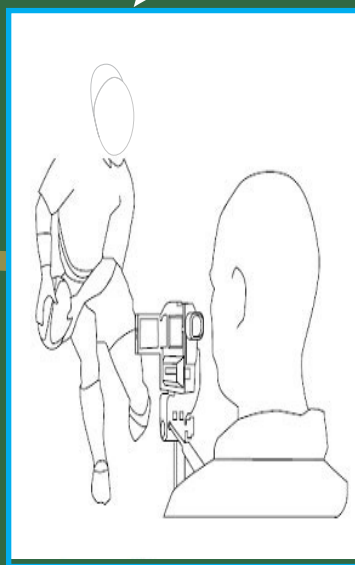
Direct movement analysis is based on the simple option for image by image navigation in the video sequence. For most sports skills its certain position that's important which leaves this feature as the first step in skill analysis.

## Video overlay movement analysis

Video overlay movement analysis gives the option to compare current movements with earlier executed movements. Hopefully it will show improved effect of the training.

## Kinematic movement analysis

Kinematic movement analysis is a thorough analysis of positions, angles, velocity and so on. All analysis can be made in the relation of body joints, segments and centre of gravity.



**2. Watch and review**  
Accurate analysis of fast or complex movement with a frame rate of 50 images per second (standard video is only 25 images per second).

**3. Analyse**  
View in slow motion or frame-by-frame and measure accurately with the advanced drawing tools.

**4. Save, present and share**  
Create Presentations with different suitable applications and share your analysis with athletic students or coachings.



# ANALYSIS

Compare/Relate Skill/Technique with other Players

Compare/Relate own Skill/Technique before and after training

Compare/Relate own Skill/Technique in different conditions

Compare/Relate own Skill/Technique in practice and in competition

## VIDEO ANALYSIS

### Pre Test

6. High Speed Video Capture with 300 F/s to 1200 F/s
7. Two Camera Placed at two Different Angle for getting 2D or 3D effect
8. Attempt to find out the positive and negative aspect of performed Skill/Technique with the help of captured video
9. Available Expert draw a guideline for deleting negative part of

### Post Test

1. High Speed Video Capture with 300 F/s to 1200 F/s of same Individual.
2. Two Camera Placed at two Different Angle for getting 2D or 3D effect.
3. Compare current performance video with previous captured video of same Individual.
4. Authenticity of training Program will be evaluated easily.



# PLANS & PACKAGES

## BASIC PACKAGE\*

- 1.High speed video capture with various frame rates(30FPS, 60FPS, 300FPS, 600FPS & 1200FPS) according to the requirement of skill/technique.
- 2.Two cameras placed at two different angles for getting better view of skill/technique.
- 3.With the help of software we analyse any skill/technique frame by frame.
- 4.From the captured slow motion video we attempt to find out positive and negative aspect of performed skill/technique in front of players and coach.
- 5.Coach/Expert draw a guideline for remedy of mistakes which is obstruction for optimal performance of the players.

### Asking Price

Per Individual- ₹5,000

Entire team of one game - ₹30,000

For 7 days- ₹50,000

## STANDARD PACKAGE (pre and post analysis)\*

- 1.High speed video capture with various frame rates(30FPS, 60FPS, 300FPS, 600FPS & 1200FPS) according to the requirement of skill/technique.
- 2.Two cameras placed at two different angles for getting better view of skill/technique.
- 3.With the help of software we analyse any skill/technique frame by frame
- 4.From the captured slow motion video we attempt to find out positive and negative aspect of performed skill/technique in front of players and coach.
- 5.Coach/Expert draw a guideline for remedy of mistakes which is obstruction for optimal performance of the players.
- 6.After feedback capture once again his/her same skill/technique video will be captured and compared with earlier one.
- 7.Training should be designed according to his/her result

### Asking Price

Per Individual- ₹10,000

Entire team of one game - ₹50,000

For 7 days- ₹75,000

## TOTALLY CUSTOMIZED PACKAGE (pre and post biomechanical analysis)\*

- 1.High speed video capture with various frame rates (30FPS, 60FPS, 300FPS, 600FPS & 1200FPS) according to the requirement of skill/technique.
- 2.Two cameras placed at two different angles for getting better view of skill/technique.
- 3.With the help of software we analyse any skill/technique frame by frame
- 4.Draw angles of body segments, find out velocity and other biomechanical variables to observe performed skill/technique minutely.
- 5.If required then data will obtained in different condition i.e practice and competition settings.
- 6.Research could take place for better performance by comparing initial data with data obtained after prescribed suggestion or training.
- 7.Results can be displayed in graphical manner.
- 8.Training should be designed according to his/her result

### Asking Price

Per Individual- ₹15,000/-

Entire team of one game - ₹60,000/-

For 7 days- ₹1,00,000/-

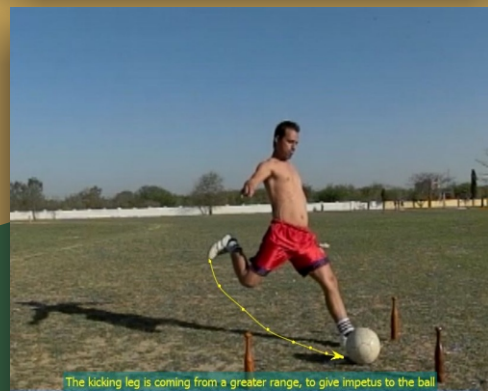
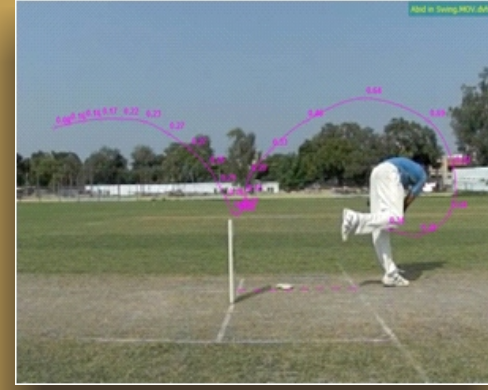
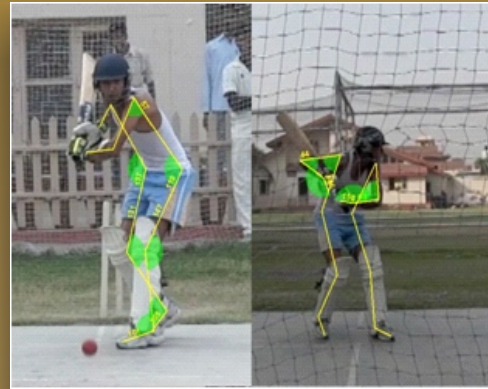
**\*Conditions apply**

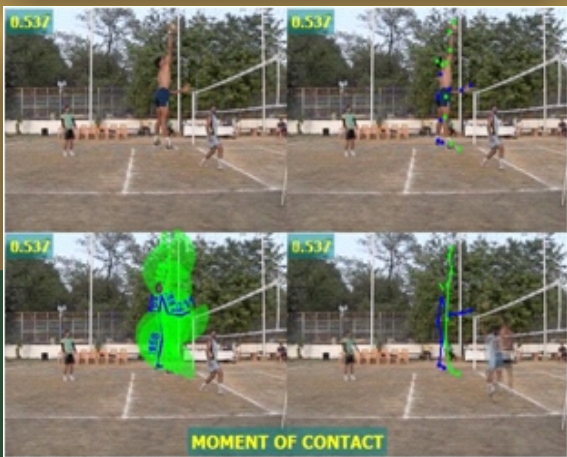
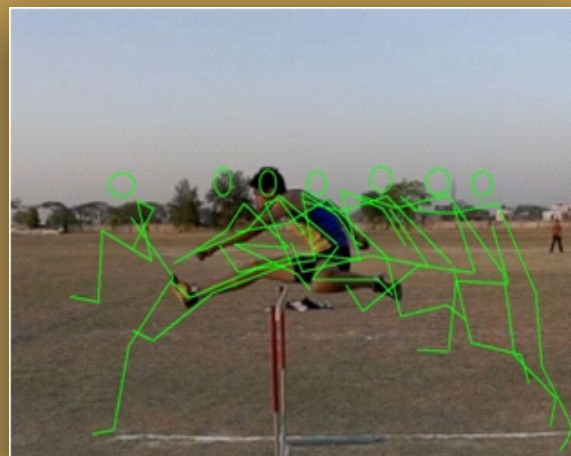
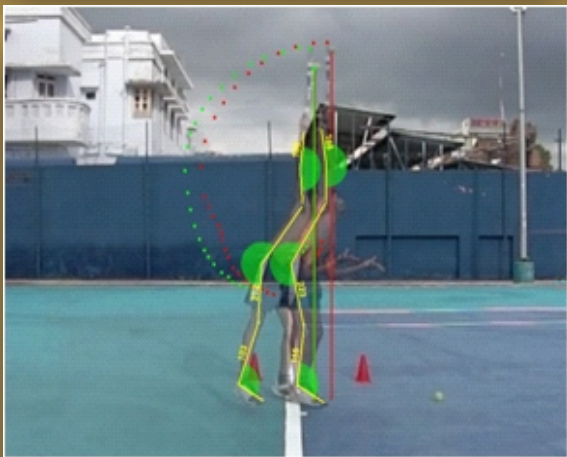
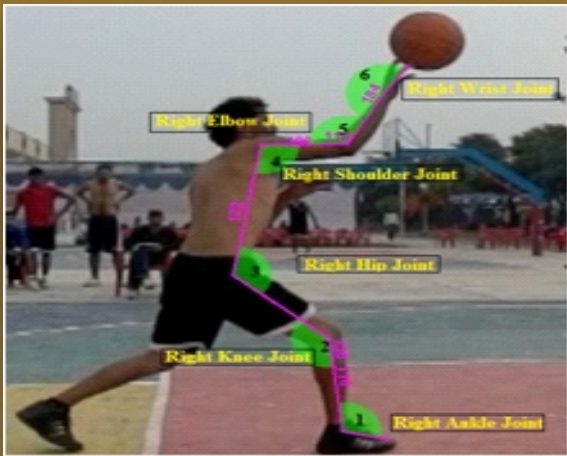
**Cater according to your need**

# SPORTS BIOMECHANICS



## SMALL TOUR OF OUR WORK WHICH WAS ALREADY APPRECIATE APPRECIATE





We Would Love To Serve You

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