

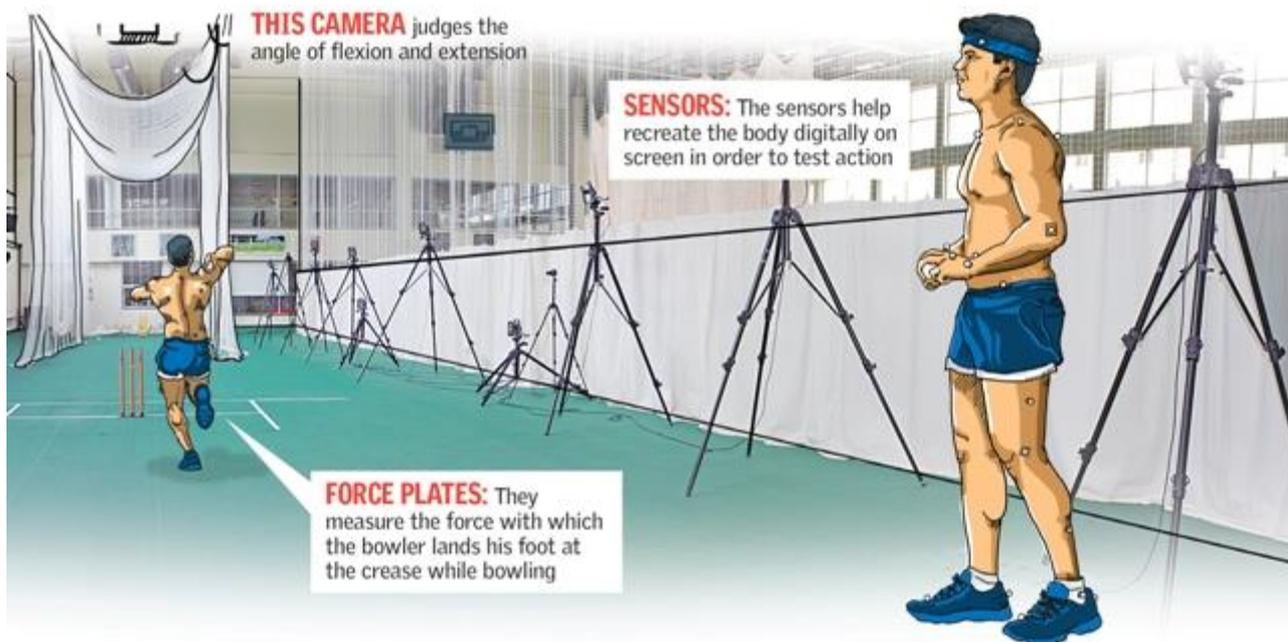
Up close with action

S. Dinakar

The bowler had retro-reflective markers, as many as 20 of them, on his shirtless body. The sensors gleamed even as he prepared to get his action scrutinised.

The Hindu had received rare and exclusive access to the sprawling Sri Ramachandra Sports Medicine Centre's bio-mechanical facility when testing was in progress.

The issue of bowling action continues to be a burning topic. Recently, celebrated former elite panel umpire was in Chennai to conduct a seminar for BCCI umpires on suspect action at the facility.



As the bowler went through with his action, the 3D cameras emitted infrared light, which was then reflected back by the markers on the bowler's body.

The setting was quiet, the bio-mechanics were ready and the equipment was switched on.

The procedure was scientific. Capturing action using latest motion technology were 20 3D cameras, 10 on each side of the pitch. They could do so at an astonishing 750 frames per second.

There were 10 2D cameras as well to provide those analysing the feed another perspective.

Since there were cameras at either end of the pitch, dual motion capture technology was being used. The entire sequence of movement could be caught simultaneously by lens on both sides of the pitch.

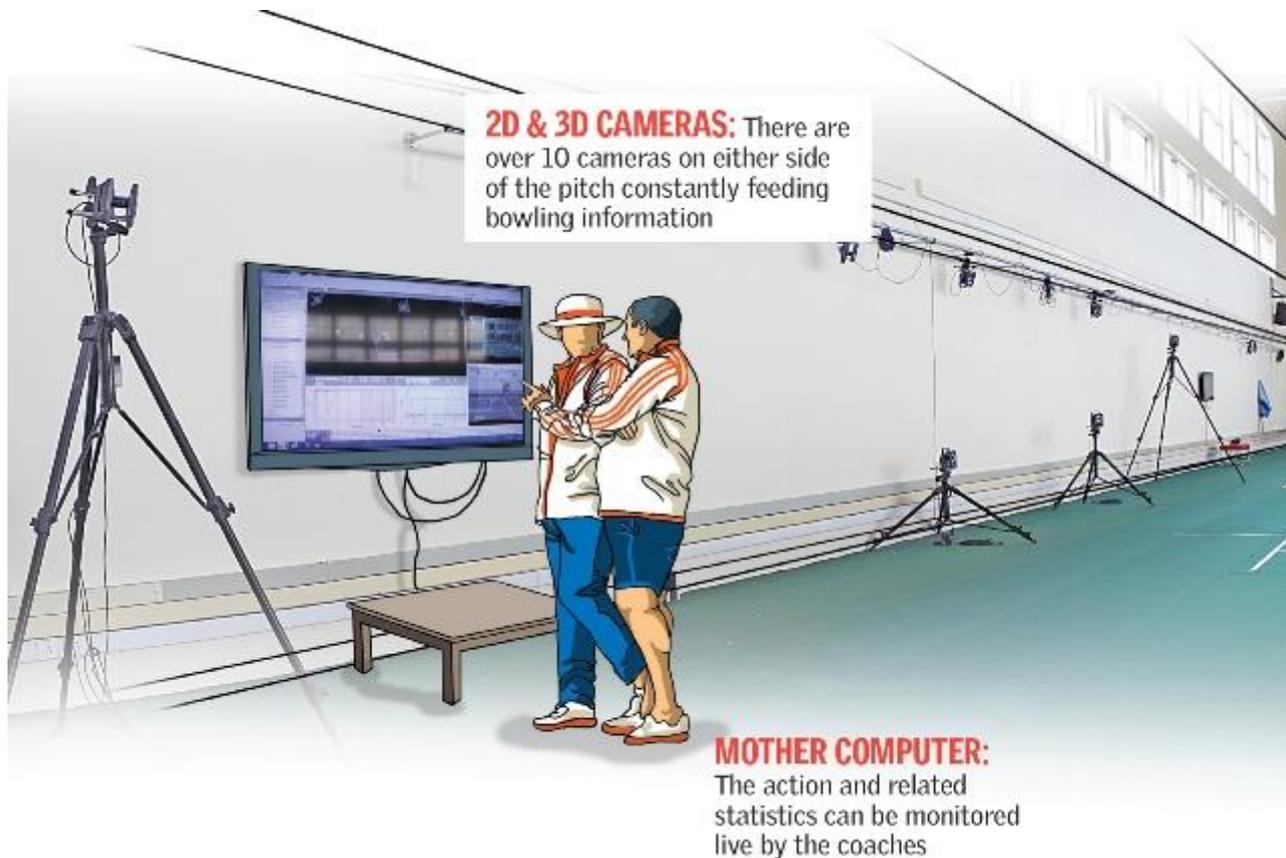
How did it all work? As the bowler went through with his action, the 3D cameras emitted infrared light, which was then reflected back by the markers on the bowler's body. This was picked up the cameras, broken down into several segments, and fed to the mother computer.

On the computer we had 3D images of the markers on a bowler's frame during different stages of his action. The computer can take up to 75 hours to connect the dots and come up with its findings.

The International Cricket Council (ICC) introduced the 15 degree flexion rule in 2004. The ICC said it was at 15 degrees that chucking was visible to the naked eye.

Bio-mechanic Anees Sayed, who works at the facility here, explained to The Hindu, “We take data, from the upper arm horizontal to the release of the ball. Between these two points are the maximum elbow flexion and the maximum extension of the arm. The difference between the two is the straightening of the arm.”

It is the bending and the straightening of the arm that defines chucking.



For instance, if the maximum elbow flexion is 30 degrees and the maximum extension of arm is 20, then the difference is 10. This is well below the permissible level of 15 degrees. On the other hand, if the difference is more than 15, then the bowler's action is termed illegal.

Normally, a bowler under the scanner is asked to bowl three overs. However, he could be pushed to send down more deliveries if he has variations such as the carrom ball, the doosra, the arm-ball or the quicker one.

Since the bio-mechanical centre here is the only such ICC-accredited facility in Asia, several prominent international cricketers have had their bowling action tested here.

They include Pakistan's Saeed Ajmal and Mohammad Hafeez, the West Indies' Sunil Narine and India's Pragyan Ojha.

And the BCCI consistently sends a stream of domestic bowlers here to get their action mended.

The features here travel beyond correcting actions. These include features that are related to injury prevention and rehabilitation.

The force plates, 10 on the batting side and four on the bowling area, measure the force exerted by the foot on the ground. These plates also record the resultant force from the ground to the body.

Sandile Sibeko, the South African bio-kineticist at the facility said, “If a bowler's body weight is 70 kg and the force he exerts is 500 kg, then it is more than six times his body weight. He is thus prone to injuries.”

The 3D cameras also assist in assessing a bowler's action – if he is side-on, chest-on or has a mixed-release – that does a critical role in preventing injuries.

The plates on the batting side provide insight into a batsman's footwork, on his front foot and the back leg, whether or not he is putting too much pressure on one. They also give us information about batsmanship's critical attribute – balance. The findings can assist in technique being corrected.

Then there are the Speed Gates, that actually are a series of infrared rays placed at specific intervals. On view is cutting edge technology.

When an athlete cuts an infrared beam, the timing of the impact is recorded. The reading has 0.0001 per cent accuracy.

Different sports demand different bursts of speed. In cricket for instance, the ideal pace over 40 metres is around five seconds.

To hone their skills, the cricketers have been provided six pitches of different soil types.

Lending the place a cricketing ambience are portraits and photographs of famous cricketers, collected and arranged by former Kerala Ranji cricketer and museum curator J.K. Mahendra. Another former Kerala Ranji player Subramaniam Ramesh looks after the administrative part. Former first class bowlers D. Vasu and M. Venkataramana work on correcting actions.

Indeed, cleaning up suspect bowling actions is a top priority for the umpires, bio-mechanists and the cricket coaches these days.

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