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A unique testing centre for suspect bowling action

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Dubai: The year 2014 is sure to go down in cricket history as the most prolific in terms of the number of bowlers being banned for suspect actions. Just between the months of July and October alone, no less than five international cricketers – Sachithra Senanayake (Sri Lanka), Kane Williamson (New Zealand), Saeed Ajmal (Pakistan), Prosper Utseya (Zimbabwe) and Sohag Gazi (Bangladesh) – were reported to the International Cricket Council (ICC) because of official concerns about their bowling actions and subsequently sanctioned. And while no Indian bowler in recent times has come under the ICC scanner since Harbhajan Singh was reported and cleared back in 2005, major efforts are being taken to ensure that bowlers bowl within the legal limits.

One such endeavour has resulted in India's ICC-accredited testing centre for suspect actions at Sri Ramachandra Medical University in Chennai, India which is all set to boost cricketing standards through scientific research on the game. The Sri Ramachandra Arthroscopy and Sports Science Centre (SRASSC) is the second such centre in the world to get an approval from ICC for testing bowlers following the centre in Brisbane, Australia.

Equipped with modern facilities and expertise, it is the first of its kind in India and its mission is to enhance the performance of not only cricketers but also sportspersons from other disciplines. The Board of Control for Cricket in India's (BCCI) National Cricket Academy (NCA) rehab centre has also been relocated to this university from the NCA in Bangalore.

Over the years, the science of sport has gained huge impetus and is now coveting international attention. Dr. Alwar Thiagarajan, the Chief Operating Officer in charge of sports science services, who was recently in Dubai for talks with the ICC and Emirates Cricket Board officials, talked to Gulf News on the novel research that is being conducted at the centre apart from testing bowlers with suspect action with the most modern equipments.

"The idea of sports as a science took shape when Dr S. Armukam, who is the Head of the Department and is an Orthopedics surgeon, travelled around the world and watched top sports facilities and sports specialisation and wanted to establish something similar in India," Thiagarajan said. "Our chancellor V. R. Venkatachalam is an avid cricket lover and our founder NPV Ramaswamy Udayar, also a sports lover, backed the initiative. We consulted with people in the UK and US and also struck up a nice relationship with the University of Cape Town, South Africa. Professor Timothy Noakes, a world renowned sports scientist became our mentor. He appreciated our ideas and through his guidance we got the right contacts and established the centre."

Well-equipped (subhead)

Bowlers from around the world are now being flown in to SRASSC. Elaborating on the centre's work, Thiagarajan said: "The ICC has given all the directions and protocols as to when a player should be tested and with what equipment. We have the best of equipment for it. Previously we used to test with infra-red cameras and we have almost 20 of them when actually only 10 to 12 are needed.

"The bowler will be monitored by 10 to 12 3-D cameras and sometimes even 16 cameras using infra-red technology along with two high-speed video cameras. This action is captured through reflective markers and this creates a picture of the bowler with all the angles and lines and essentially the skeletal structure is reconstituted in a stick figure.

"Vicon, who are leaders in image motion capture technology, have come out with a software. Incidentally, the ICC has also released a documentary on how the testing is done and it was shot at our centre."

Thiagarajan also revealed how modern machines have helped testing accuracy.

"It is now called clusters instead of the process of sticking the markers directly," he said. "We have plastic sheets now and we stick many more stickers on that, so that the accuracy is better. The error due to skin movement has been reduced and hence it is much more reliable and accurate. The ICC has done a lot of research with their scientists and is trying to develop a foolproof system of testing bowlers' action so that umpires can hereafter confidently deal with this issue."

Preparations as a testing centre began very early and Thiagarajan said: "Before we did the first ICC testing, we had, as an experiment, tested almost 50 bowlers from our university. State and national bowlers were also tested.

"We have perfected the process and our first report was on Bangladesh bowler Al Amin Hossain whose bowling action has since been cleared."

Besides correcting bowlers' actions, SRASSC also doubles up as a cricketing centre of excellence.

"We all know cricket is a game of skill and like football, which has improved through scientific training. We want cricket too to benefit. Bio-mechanics is not only for chucking issues, but it can prevent injuries by assessing a bowler's action. Even fast bowlers' careers can be prolonged and performance enhancement done. For example, if somebody wants his bowling speed to improve, we can analyse the action and provide the scientific inputs to the coach as to which movement pattern will be ideal," he said.

"Our four research papers will be presented at the cricket science congress during the semi-final of the World Cup in Sydney on March 26, 2015. It is a three-day conference and our papers have been accepted. We are going to present papers on how we do bio mechanic testing on cricketers and we are going to tell the world about our experience. Three of us will be presenting the papers."

Methods and technology (subhead)

Thiagarajan also elaborated on the various methods and technology that will assist cricketers to excel.

(Bullet points)

Physiotherapy evaluation: "Fitness has become very important as cricket is becoming more athletic now. The physiological profile pertains to what is his heart and lung capacity, the muscles, the power, endurance flexibility and how a cricketer have to ideally maintain himself. He will be tested every six months or one year like the master health check up for a common man. We will test them on all the skills and give a comprehensive report. We indicate the areas of strength and areas of weakness and also give our recommendation about how this can be improved by giving a training programme or a nutritional plan. This holistic approach will definitely help cricketers enjoy the game and have longer career and give better performance."

Injury prevention: “When we talk of injury, we usually mention fast bowlers. Their spines and shoulders are being rotated into action and a lot of research has been done in cricket specially through bio mechanics and muscular skeletal evaluation and hence some parameters have to be followed. For example when a bowler lands, sometimes the weight that goes into the front foot is eight times the body weight and it should not exceed that. That is why bowlers like Brett Lee bowled with less jump. Side bending should not be more than 30 or 40 degrees and that will prevent the spinal fraction. Then there is the front-foot bend on landing. If it’s more, you lose speed and if it’s less, you injure your spine because the shock absorbing is not there. So all these internationally researched parameters are there and we compare these parameters with the bowlers’ existing parameters and we then indicate to the trainer, coach or physiotherapist of the team so they take preventive actions like an exercise programme or correcting of action and this should definitely improve their performance as well as reduce the injuries.”

Research on batting: “The international research has until now mainly focused on the legal action of bowling or spine injury and how to improve the speed. Very little research has been done on batting, fielding and wicket-keeping. As an aspiring centre of excellence for cricket we want to do some ground-breaking work like assessment of fielding, assessment of wicket-keeping and assessment of batsmen and we are the only centre which has this double area of motion capture where batting and bowling can be captured simultaneously and we intend to use this facility later on to assess a batsman’s anticipation skills and playing skills based on bowlers reaction and body. We are trying to find something scientific in it.“

Improving anticipation: “Football has done a study on improving anticipation. They used eye tracking technology and Ronaldo was tested and it showed how superior he is when compared to others. We envisage using this kind of technology like eye tracking and we also plan to stick muscle activity readers in batsmen so that it can measure when the muscles start to function and how many micro-seconds in takes and how come good batsmen have that little more time to play shots like Sachin Tendulkar and Mahela Jayawardene and how they manage that micro-second extra that makes a lot of difference to their timing. So all these things are fascinating and we’ll see whether we can research them and similar model can be evolved or training can be achieved.”

Conditioning a cricketer: “Shaping a cricketer to perform in any weather is vital. If a cricketer is born in the UK and is coming for a tour to Sharjah or the UAE or India, as a sports scientist or strengthening condition expert I would be planning his trip. There are now environment chambers where the temperature, humidity and wind speed can be created and we can ask him to do some exercise and see his response like heart rate etc. When we find that he is not up to the mark we help him get acclimatized. We have an altitude chamber also where we can simulate a low oxygen condition which is what you get when you play in high altitude centres like Dharmasala or Johannesburg. Not only that, we can improve their performance by putting them in such challenging environment. For a sportsman coming out of injury, strength conditioning is important after the initial physiotherapy.”

Expertise of Paddy Upton and Gary Kirsten: Among our expert team is Paddy Upton, the sports psychologist, since mental conditioning is vital for success. Coach Gary Kirsten is interested in tying up with us to share his expertise and experience. Kirsten and Upton are a good team. Upton approached us because he was worked with Indian team and has delivered. He liked the concept of a cricketing centre of excellence. Upton has created a protocol about how to analyse the mind of a cricketer and what to do with the results and how to improve.

Research on nutrition: “Cricket is unique because it is not a time-bound sport like football. Now T20 is more like football. Different formats of the game and different position of the players like a fielder or a batsman or a wicketkeeper makes each one’s requirement different. Shelly Meltzer, who is our Sports Nutrionist, has over 30 years of experience and has made a protocol about how to assess the players’ nutritional needs. More than the calorie value, she has prescribed food palatable to Indians. For example, Anil Kumble and Javagal Srinath were vegetarians. In fact, Srinath survived only on rice and curd and if he had proper nutrition, his performance would have been even better.”

Performance enhancement: “For performance enhancement, it requires an understanding of the sport and then the players’ role in the sport, his physiological process like what is his body like and how does his body function. This is what is called muscular skeleton profiling as well as physiological profiling which uses all those tests we do. Once we know where he stands, we compare what he has to do for the international standards. For example, if your grip strength is only 85 percent, it has to be upped to 95 per cent. Already, international research has been done and some recommended parameters are there, so we have to create a profile of the athlete and see how what he lacks and then we can create reports and recommendations and pass it on to their physiotherapist or coach or trainer, so that they can work towards a tangible visible goal instead of blindly following something. This gives objective time-based guidelines for the coach and players and trainers.”

Goal: “We have a single-minded dedication to improve sports through science. Nourishment of skill is handled by the coaches. Our aim is to provide the best of sports science and medicine services to the athletes and teams and organisations and then to provide and be a hub of education for the team behind the team like physiotherapists, masseurs for the doctors and to do ground-breaking research. We want to be a knowledge hub for source of information and source of quality services.”

By K.R. Nayar Chief Cricket Writer

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