

# THE BIOMECHANICIST

## COACHING SPECIAL

Sports scientist Ryan Lumsden has upset more than a few PGA professionals. But he is changing the way elite golfers are being coached in the 21st Century.

BY **ROHAN CLARKE**





▲ Ryan Lumsden performs a biomechanical analysis on Victorian professional Alison Whitaker at Spring Valley Golf Club in Melbourne.



▲ Tiger Woods has employed Chris Como as his swing consultant. Como is studying biomechanics at Texas Woman's University under Korean professor Young-Hoo Kwon. They have worked together using 3D motion analysis to teach golf swing mechanics from a biomechanical perspective.

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HE HAS a degree in cynicism and a Scotsman's dry wit. But Ryan Lumsden might just be the most knowledgeable person in Australia when it comes to understanding the golf swing.

Lumsden is this country's foremost biomechanical analyst. As such, he works closely with each of the state instructors that form Golf Australia's national coaching network, examining the swings of elite amateurs around the country.

On the international

stage, Lumsden has been an indispensable muse of Pete Cowen, the Yorkshireman who has transformed the games of Europe's top professionals. Henrik Stenson rose to world No.2 on the back of Cowen's all-encompassing approach to coaching where biomechanics plays an integral role.

Ritchie Smith – the Western Australian coach of Oliver Goss and Minjee Lee – is another devotee. The 2014 PGA Teacher of the Year pays Lumsden the ultimate compliment by saying: "Technically, I think he is the best coach in the country."

"He understands the body better than anyone. He knows more about technique than almost anyone else. So I'm very happy to take advice from Ryan. If I say something and Ryan says something, I'll pretty much go with what Ryan says almost every time."

It's no coincidence those states that have embraced Lumsden's

biomechanical assessments are starting to get results. Despite a relatively small selection base in Western Australia, Smith guided the women's amateur team to the Interstate title in three of the past four years. The Victorian system has a conveyor belt of talent and contributed half of the 10 Australian competitors at last year's Asia-Pacific Amateur Championship. And, South Australia produced two of the best performances last summer: Antonio Murdaca captured the Asia-Pacific title while injury-prone drifter Nick Cullen made a long overdue statement with his Australian Masters success.

Biomechanics has been in the news recently following Tiger Woods' decision to hire Chris Como as his swing coach. Como is studying for a Masters at Texas Woman's University under the tutelage of Korean academic Young-Hoo Kwon, the director of the Biomechanics Laboratory.

It's an encouraging

development according to Lumsden (who gave a presentation to a conference session chaired by Dr Kwon for the International Society of Biomechanics in Sports in 2012). But Lumsden laments that many Australian coaches have been slow to embrace biomechanical analysis and improve their knowledge in this area.

The 35-year-old is partly to blame as he shies away from the limelight, choosing to work in relative obscurity on the developmental side of the game in Australia. His credentials, however, are at least the equal of his Korean counterpart.

Born in Dundee, Lumsden grew up in St Andrews where he was a scratch marker and Scottish junior representative. He studied Sport and Exercise Science at the University of Strathclyde in Glasgow, graduating with honours in Biomechanics in 2001. The syllabus covered all aspects of sports science, such as exercise



▲ Nick Faldo was a keen student at the 2004 Heineken Classic. Lumsden and the late Ramsay McMaster put the six-time major winner through a biomechanical analysis on the range at Royal Melbourne.

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– WA state coach Ritchie Smith

which assist with making such swing changes.

With regard to elite golfers, Lumsden analyses the movement and body functions within their full swing. He wants to establish the most effective way for an individual to swing the golf club.

"You're trying to see what they're physically capable of doing and get them using the correct muscles to support the movement, so they're generating clubhead speed in the most effective way. You're trying to develop efficient technique while minimising the stress on the body as well as giving them the ability to play all the shots required, controlling distance, shape and trajectory."

That last point explains why the injury-prone Woods has sought out a coach, such as Como, with an appreciation of biomechanics. And it's also for that reason why the best young amateurs in Australia are required to visit Lumsden for a biomechanical analysis.

Using an electromagnetic tracking system, Lumsden places sensors on a golfer's body to gather information about position and orientation throughout the swing. That is reconstructed through maths and computer software to process all the displacements and angles. Lumsden translates that data into which body segments are moving where and how they're sequencing during the swing.

"Some things are very intricate in the golf swing and you just can't see them with your naked eye," says Ritchie Smith. "We've got a hunch, but you need data to back it up. And that's where he comes into it."

The aim is to create the right 'angles' in the swing. If a golfer can maintain these angles better, then rotational ability becomes more stable. And because of that stability, a golfer's able to swing the club harder.

In theory, that translates

into longer drives and shorter approach shots into the greens to set up more birdie opportunities – a prerequisite to compete in today's power game. A lack of body angle changes also leads to straighter drives says Smith. "If you're maintaining a tighter, more wound and more efficient structure, then surely your delivery is going to be better because of it."

Some would argue this turns golf more into a science than a game. And there could be a suggestion Lumsden's work makes golfers a little bit robotic due to the nature of swinging within certain physical parameters. But that's not entirely correct because he will take into consideration what a golfer's body is capable of doing. And he will consider an individual's preferences for technique and accommodate these before recommending any swing changes.

"I'm matching that up with what they're trying to achieve with their swing and what concepts they have," says Lumsden "because it's no use to me if I get a player coming in and they say they're trying to keep the clubface shut going back. But by keeping the clubface closed going back, they're actually causing their body to tilt and affecting their pivot and therefore affecting how they get pressure into the ground and so on."

### OVERCOMING LANGUAGE BARRIERS

● IT'S EASY to see why Lumsden can intimidate some people. He speaks in terminology that – unless you're really switched on – it's hard to keep up with. Plus, he produces data that is interpretable only to those who understand the data and have used it for a while.

Some PGA professionals

physiology, sports psychology, sports nutrition, strength and conditioning and skill learning.

In the final year of his degree (having never been on a plane before), Lumsden came to Australia, which coincided with the 2000 Sydney Olympics. He had been in touch with the late Ross Herbert and arranged to do some work experience at the Australian Institute of Sport golf program in Melbourne.

The stint had a profound influence on Lumsden, who got to see the pioneering approach of the AIS, which had begun to train golfers like Olympians through the introduction of physiotherapy, sports psychology and strength and conditioning training.

Lumsden returned to Australia at the start of 2003 and has remained ever since. When he's not on the road, he works as a private contractor at the Victorian Institute of Sport's facility at Spring Valley Golf Club and at Golf Australia's head office in Melbourne's CBD.

### BEHIND THE SCIENCE

● LUMSDEN calls himself a sports scientist, which conjures up the name of Stephen Dank, the man synonymous with the notorious supplements program at the Essendon Football Club in 2012. Hence, the title of sports scientist has been a source of amusement for Lumsden upon being greeted by customs officials after writing it as his occupation on passenger cards when departing/entering the country.

But the scope of a sports scientist encompasses many facets, not just biomechanics, which Lumsden regards as a branch of the overall discipline into how the body functions during movement. The psychology of sports science, for instance, is useful in knowing how to deliver information and help golfers with changes to swing mechanics. It's about making them understand why they are doing golf-specific exercises to improve their bodies,



◆ English teaching pro Pete Cowen is glowing in his praise of Lumsden. In a testimonial, he said: "You know how much I appreciate your knowledge and insight and input into helping me understand biomechanics. You would always be my first, and probably only, port of call on this subject because you understand where I am coming from with my preferences."

take offence when someone they perceive as less qualified begins to critique their teaching methods. "If you're working in a way that the body can't work, he will tell you. And that's where Ryan gets a little bit offside with some coaches," says Smith.

According to Lumsden, things that stand out to coaches are usually how the body is positioned at impact and how the club is released through impact. They're often the things they focus on and try to change. But Lumsden says those things that occur through impact are usually compensations that make a player's swing work. Hence, trying to tell a coach how to suck eggs doesn't go down too well and frequently leads to conflict.

"I cop it a fair bit because

people don't really understand what I'm doing," Lumsden concedes.

"By identifying causes, I'm often looking at different things to what the coaches are, and placing importance on different things to affect outcomes. It can often take a bit of discussion to get on the same page.

"Because I'm talking golf swings and technique, it's very close to what the coaches do. They don't understand I've got that degree providing underlying knowledge about functional anatomy and how the body's working, together with the background of quantifying thousands of swings of players at all levels.

"Often they think that biomechanics is about testing

a player and telling them how they should be swinging it. But that's not how I work. So a lot of the time, the coaches think it's my opinion. It's not my opinion, it's actually black and white in evidence there in front of you. I'm confident of my interpretation of how certain things interrelate within the golf swing based on this evidence."

Perhaps, it will be Woods' relationship with Como and Kwon that changes people's understanding of biomechanical analysis. Sceptics and agnostics would certainly have to reconsider their views if Woods can reconfigure his swing for a fourth time and dominate on the US PGA Tour like only he can do. And that would be a good thing for those, like Lumsden, trying to

promote the usefulness of sports science in golf.

To the agnostics, Lumsden says: "I know how I can influence aspects of the swing. And I know how quickly we can do it if we're focussing on the right thing. But more often than not, they want to focus on the wrong things... Unfortunately, a lot of these coaches won't come and have a conversation to go through what you think, what you know. I'm happy to justify what I say and put evidence behind it." ●

**Footnote:** For further information about Ryan Lumsden and the biomechanical analysis and sports science consultancy services he provides through his company, Q Golf, visit [qgolf.com.au](http://qgolf.com.au)