

Time to Focus Your Attention



Paul Hurriion shoots a video of Padraig Harrington on the putting green

The digital age has put video and movie-making within the grasp of everyone and the use of a video camera is a very effective tool to help improve your putting technique. Video helps the golfer to understand and visualise the basic fundamentals of a specific action and more and more golfers and coaches are using video feedback as a coaching aid. Putting guru Dr Paul Hurriion explains.

VIDEO WORKS by creating the illusion of motion by 'tricking' the human eye. They play many flashing still pictures – frames – each second. We all have quite slow vision – the human eye can separate a maximum of 10 to 12 images per second.

The video frame rate (frames per second or fps) is faster and the eye cannot separate those pictures so the brain interprets them as a moving picture (movie). It is even suggested by scientists that events

lasting less than a quarter of a second cannot be seen clearly, if at all. This is why, in my role as a coach, I must use a video camera to obtain maximum information to assess and provide informed feedback to my professional golfers – and why you should use video for your game.

In addition to a video camera, I use video analysis software. Naturally I use the software that I have helped develop through my company, Quintic. This soft-

ware enables me to capture *live* video at 50 or 100 fps. At 100 fps, each still image is just 10 milli-seconds apart, providing 10 times more images than my eyes.

Although the putting stroke isn't fast, video captured through the software provides the extra information I need to analyse the subtle body movements that make the difference between good and bad putting technique.

With this recorded information

of the golfer's putting stroke and the combination of my bio-mechanical knowledge and experience, I create the template the golfer needs to use for concentrated practice to eliminate flaws in technique – flaws such as ball position at address, shoulder rotation at the top of backswing, wrist position at impact and club alignment at follow through.

As a coach, I find that providing the golfer with immediate performance feedback using the Quintic software analysis functionality becomes a very powerful tool and particularly good for the important aspects of what I call 'feel and real' – or 'are you doing what you think you are doing?' My golfers must carry an accurate visual image of their correct stance, address and swing in their heads. Is that my posture? Ball position okay? Am I standing open at address? Is my stance and balance okay during backswing, downswing ... and so on.

In comparing a golfer's performance of previous putts during practice sessions, practice rounds or even the final round of a tournament, the software enables me to compare different video images side by side and use analysis tools. Visually imperceptible variations in technique (for example in tempo, pre-shot routine, posture) are considered with the golfer and included in the practice template.

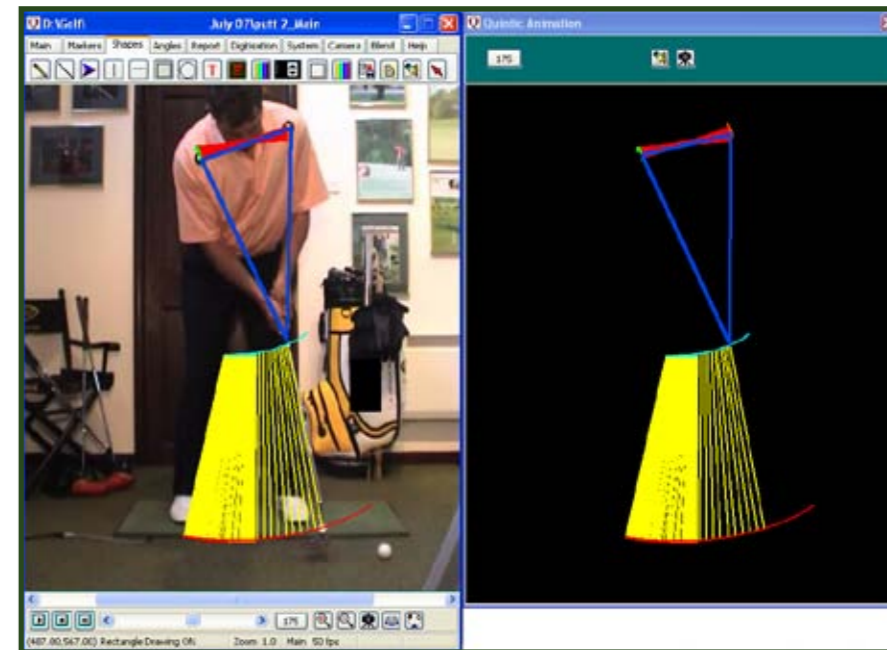
This strategy becomes a continual process. It never stops, but the coach has to decide when and how the feedback is presented to the golfer. Factors such as how close they are to a tournament, their level of understanding, and their stage of technique development are considered to ensure changes are managed.

Coaching is all about cause and effect. I may see something wrong with the path of the putter through impact, but further analysis may show the cause of the problem to be lower body instability. The skill of my job as a coach and a bio-mechanical scientist is to work out why something is happening.

A good example of this is the right hand 'flicking' the putter at the ball through impact. You will hear commentators say: 'His left wrist broke down at impact', which means that the putter head closed prior to impact and the ball was pulled left. Of course, players do not do this intentionally and they can work very hard to eradicate it by changing grip, posture, rhythm ... without much success.

I will explain below how the power of video and the Quintic software can identify and assist in solving this common putting problem of the right hand flicking or releasing at impact.

The image below is a current European Ryder Cup player with many victories worldwide. You will see four markers, two on the golfer (left and right shoulders) and two on the putter (one below the hands and one on the hosel). The Quintic software automatically tracks the movement of these markers during the putting stroke and displays the results on top of the video and as a separate stick figure.



“WITH THE ASSISTANCE OF QUINTIC ANALYSIS SOFTWARE I’VE TRANSFORMED MY PUTTING STROKE. WHAT YOU THINK YOU ARE DOING, COMPARED TO WHAT YOU ARE ACTUALLY DOING, CAN BE TWO TOTALLY DIFFERENT THINGS.” – DAVID HOWELL

As I have explained in previous articles for *Asian Golf Monthly*, I look to create a pendulum style putting action, with the triangle (in blue) formed by left shoulder, right shoulder and bottom of grip to be constant throughout the putting action. Maintaining this triangle is imperative for a successful and repeatable stroke.

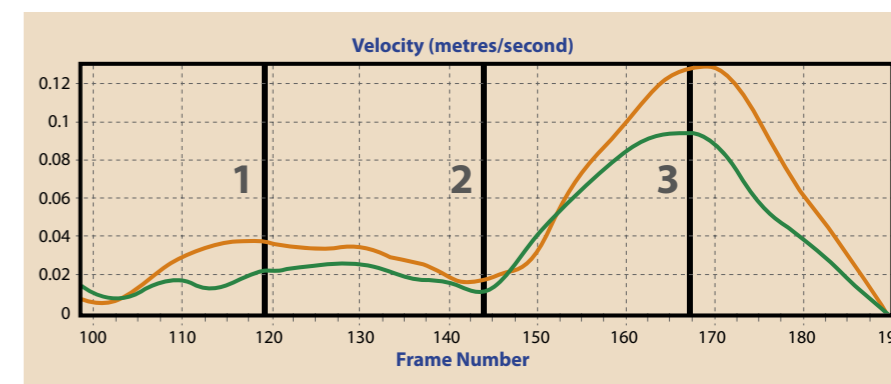
Using the software to instantly analyse the distance, velocity and accelera-

tion of the three points of the triangle, it is possible to measure the consistency of the triangle during the putting action. The graph below shows the velocity of the right (green) and left (orange) shoulders through the stroke.

During the takeaway (*point 1*), the left shoulder is more active, demonstrating an inconsistency in the ability to take the club away smoothly. During the tran-

sition (*point 2*) both shoulders are working together at the same speed which is ideal. However, as a coach I am looking for more with both shoulders continuing to work as a unit through and beyond impact.

In this example you will notice the right shoulder (green) slowing down before the left which creates separation and transfers energy into the lighter parts of the kinematic chain – the hands! As a re-





Paul Hurrión is a strong believer in video analysis for golfers.

sult, the right elbow, wrist and hands all increase in velocity, causing the flipping effect in the right hand and the left hand to break down.

No amount of thought process training or hand/arm strength training will stop this from occurring. The cause has to be identified. Video analysis will do this and the underlying problem with the movement of the right shoulder can then be addressed.

With frame-by-frame study of the results and graphs that you can easily create with video and the software, you can start to build a picture of what you are trying to achieve with your putting stroke. To help with this visualisation, think of the triangle as a large clock pendulum swinging back and forth on a fixed axis – your neck.

That is what I want you to create, except that your body has two independent shoulders that may not necessarily co-operate. Referring to the graph on the previous page, the ideal situation is that the green and orange lines are directly on top of each other. This would show that both shoulders are travelling at the same speed and maintaining the triangle throughout the stroke.

Using results from the software I have created a 'Palms Together' drill to assist – simply sandwich the grip between flat hands (equal height on the grip with straight fingers) and rock the shoulders. Do this regularly to get the correct feel. You can use video to see the improvement.

Your Camera: Good quality video images are vital to good perspective and analysis of your putting stroke. A three-CCD camera is better than a single CCD camera. CCD is the Charged Couple Device which colours the pixels on your screen using a filter to split the colours to red, green and blue. A three-CCD camera uses one CCD for each colour, resulting in better definition, accuracy and picture quality.

Four important influences need to be understood for good video: zoom, focus, light (iris) and shutter speed.

“QUINTIC PERFORMANCE ANALYSIS SOFTWARE PROVIDES COMPREHENSIVE, EASY TO USE, TOOLS TO ALLOW ME TO ANALYSE MY FULL SWING, CHIPPING AND PUTTING IN FINE DETAIL, WHETHER I'M ON THE PRACTICE RANGE, INDOORS OR AWAY ON TOUR.” – PADRAIG HARRINGTON

Zoom: In setting up, the zoom function allows you to have the camera further back from the action (typically eight to 10 metres) whilst still getting the whole subject in view. This provides the best image for analysis. It is also important to have the camera at a right angle to or directly in line with the action.

Focus: The camera should be set up so that the entire body is contained within each frame. The distance between camera and subject should be noted to allow comparisons in the future. Set the camera to automatic focus which constantly checks and focuses the subject at the centre of the picture. Manual focus can be used. Take care to get perfect focus.

Light (Iris): The iris is the aperture

in your camera which changes size to control the amount of light allowed into the lens. Many cameras have this only as an auto function and so you may not be able to change it. An automatic iris works particularly well outdoors where light quality can vary during the session. If you have a camera with a manual iris option, then you can see its influence on the picture quality as you vary the settings – lower settings let in more light to brighten the picture.

Shutter Speed: Shutter speed determines the length of time the camera's shutter is open and is essential for the good quality video needed for analysis. The faster the subject moves, the faster the shutter setting you must use to freeze the subject in each frame. It is best to have a camera with manual shutter option of at least 1/1000 second and preferably quicker. If you only have automatic settings then use the 'sports' setting which will select a faster shutter. Shutter speed does not affect the frames per second capability which are determined by the type of camera you are using.

Remember action video photography is a balance of light and movement. Faster shutter speeds will need more light so adjust the iris. Sunlight is better than artificial light so additional lighting will be needed indoors. The zoom may also affect the amount of light needed.

Always give thought to your video filming, use the fastest shutter possible in

the conditions, and you will get the best video for analysis and seeing those small movements which are so important in identifying flaws and perfecting your technique.

'Talk to the Camera' – record relevant details about each shot via the camera microphone. Without this your subsequent viewing will not give you the best information.

Normally it's difficult to correct a fault, even if you know what you should be doing. This is because you don't normally see yourself in action. You can learn a great deal from studying your own technique on video.

The benefits of video apply to all levels of performance, from the beginner to the professional golfer. There is a lot of information you miss when just using your naked eye to analyse your putting performance. Getting used to using a camera is vital to ensure you are getting the correct information.

Dr Paul Hurrión is among the world's foremost putting coaches. His passion for golf has led to a specialism in putting analysis and advice, assisting European Tour professionals and holding PGA accredited Putting Clinics. Through his work with Padraig Harrington, he advised Hi-Tec on the bio-mechanical design dynamics of their new CDT Golf Shoe. For further information, visit http://www.quintic.com/quintic_putting_laboratory.htm or www.paulhurrión.com

Paul has recently designed a signature range of putters for GEL Golf. For further details on the GEL Putting Alignment Mirror, visit www.gelgolf.com