What is shutter speed?

In the last tutorial we learnt that aperture referred to the opening in the camera lens that allows light to enter the camera and onto the digital sensor or film.

The **shutter speed** refers to the amount of the time the aperture actually remains open to let the light in. Shutter speed can also be referred to as "exposure time".

This can range from extremely fast shutter speeds such as 1/10,000 of a second to extremely slow shutter speeds where the aperture can remain open for several minutes.

How does your choice of shutter speed affect the look of your photograph?

The most obvious effect your choice of shutter speed will have concerns any motion in the scene you are capturing. Fast shutter speeds will appear to **freeze motion**. You will often see this in sports

photography for example. Slower shutter speeds will do the opposite. They will **blur motion**. Rather unsurprisingly, this is known as **motion blur**.

Both fast shutter speeds and slow shutter speeds can be used to great creative effect in many genres of photography.

Wikimedia Commons

1/500 sec 1/30 sec 1/4 sec

Let's take a look at these three photos of a colourful windmill. A different shutter speed has been used in each one.

In the first version, a fast shutter speed of **1/500 of a second** has completely **frozen the motion** of the windmill. It looks as if it has completely stopped.

In the second photo, a much slower shutter speed of **1/30 of a second** has been used. Now 1/30 of a second may seem like a very fast shutter speed. In fact, it is slow enough to **blur the motion** of the fast spinning windmill.

In the final photo, a much slower shutter speed of **1/4 of a second** has made the spinning windmill look like a **complete blur of colours**.

Slow shutter speeds that create this motion blur effect can be a great way of portraying movement in an otherwise static image.

Using Fast Shutter Speeds to Freeze Motion

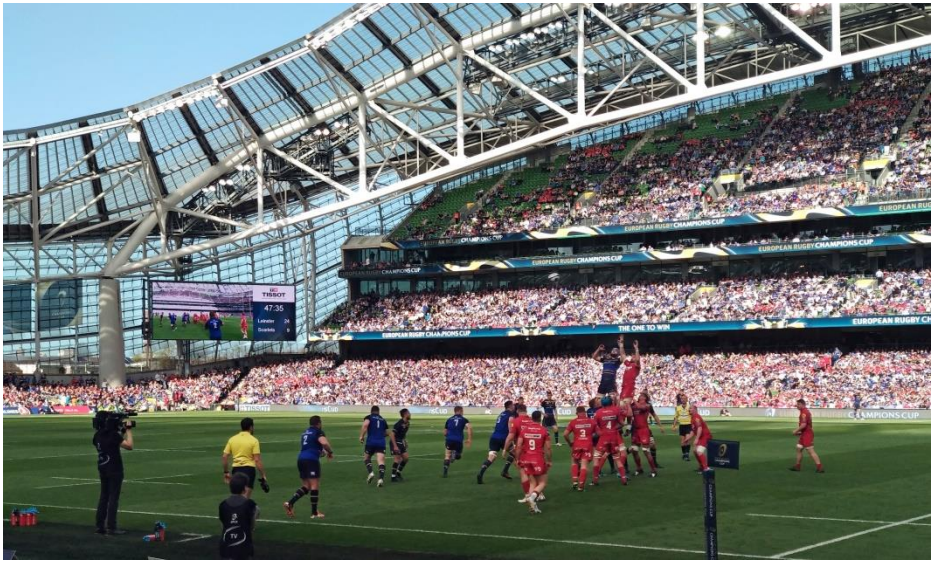
Here are some more examples of how a fast shutter speed can be used to freeze a moment in time.

Cyclist on Merrion Square in Dublin

I often use fast shutter speeds when shooting street photography. Street photography is often about capturing a precise moment in time.

The French street photographer Henri Cartier-Bresson called it capturing the “decisive moment”. I will cover this idea in a later tutorial.

In this case, a shutter speed of **1/400 second** captured the cyclist as he passed the historic Georgian buildings on Merrion Square on the Southside of Dublin City.



Rugby at the Aviva Stadium in Dublin

As already mentioned, fast shutter speeds are often used in sports photography to freeze a precise moment in the game.

In this case, a shutter speed of **1/500 second** has captured the exact moment the ball was thrown into the air at this lineout during a rugby match featuring the mighty Leinster against Scarletts.

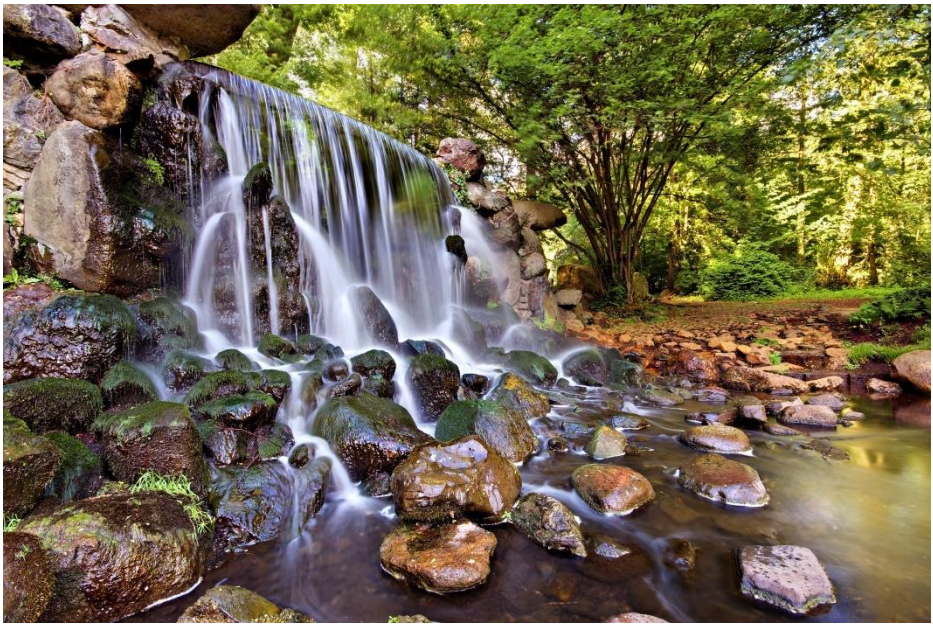
Leinster won the match but I must admit that the Welsh were far more talented singers!

Seagull by the River Liffey in Dublin

Wildlife photographers often use fast shutter speeds to freeze animals in motion and show the detail of the animal itself. I rarely take pictures of animals but this seagull in Dublin proved to be an interesting subject.

A shutter speed of **1/400 second** ensured I captured all the detail in his feathers.

Using slow shutter speeds to portray motion



Sonsbeek Waterfall in Arnhem

As we saw with the windmill photographs earlier, slow shutter speeds can be used to blur motion.

In this photograph of a waterfall in Arnhem, The Netherlands, a relatively slow shutter speed of **1/3 second** is enough to blur the flowing water to create a pleasing hazy effect that portrays this sense of movement.

Grafton Street in Dublin

In this photograph of a very busy Grafton Street in Dublin around Christmas time, I wanted to portray the movement of the people on the street as they milled about.

A slow shutter speed of **1.6 seconds** was enough to blur the people to achieve this. As mentioned earlier, capturing motion blur is an effective way of portraying movement in an otherwise static photograph.

Arcade du Cinquantenaire in Brussels

Very long shutter speeds can be used creatively to capture light trails.

In this case, a long shutter speed of **30 seconds** has caused the lights from the moving cars to leave white and red streaks of light as they sped along the motorway below me.

This is a commonly used technique in urban landscape photography. The low light at night time makes very slow shutter speeds possible.

Boat on a Beach in Hammamet

Sometimes, we can use filters to slow down our shutter speed dramatically to create even more extreme effects.

In this photo, I used a **10 stop neutral density filter** to reduce the amount of light entering the lens down to 1/1000 of what it would be without the filter.

This allowed me to set a very long shutter speed of **160 seconds**. I used a rock steady tripod for

this shot as well as a shutter release cable in order to prevent shaking the camera when pressing the shutter.

The almost 3 minute exposure time blurred the movement of the evening clouds as they moved slowly across the sky creating a very dramatic effect as well as blurring the water of the sea. Anything that wasn't moving such as the boat remained sharp.

The Importance of a Good Tripod

When using slow shutter speeds, a high quality solid tripod is essential. I'd almost say it's the most important piece of equipment for landscape photographers who tend to use slow shutter speeds a lot.

Adobe Stock

Even the slightest movement of the camera during a long exposure can cause camera shake and ruin the shot.

How do I know if a shutter speed is fast enough to hand hold without worrying about camera shake?

There are times we don't have a tripod with us or perhaps we are not permitted to use one at a particular location and we have no option but to shoot handheld.

There is a simple trick to work out if your shutter speed is fast enough to do this without risking camera shake.

Take a look at your focal length value on your lens (Focal length is covered in more detail in another tutorial). This is a measure of the angle of view or how much you have zoomed in or out.

It is measured in millimetres with lower values signifying wider angles and higher values showing

that your lens has zoomed in closer to the subject.

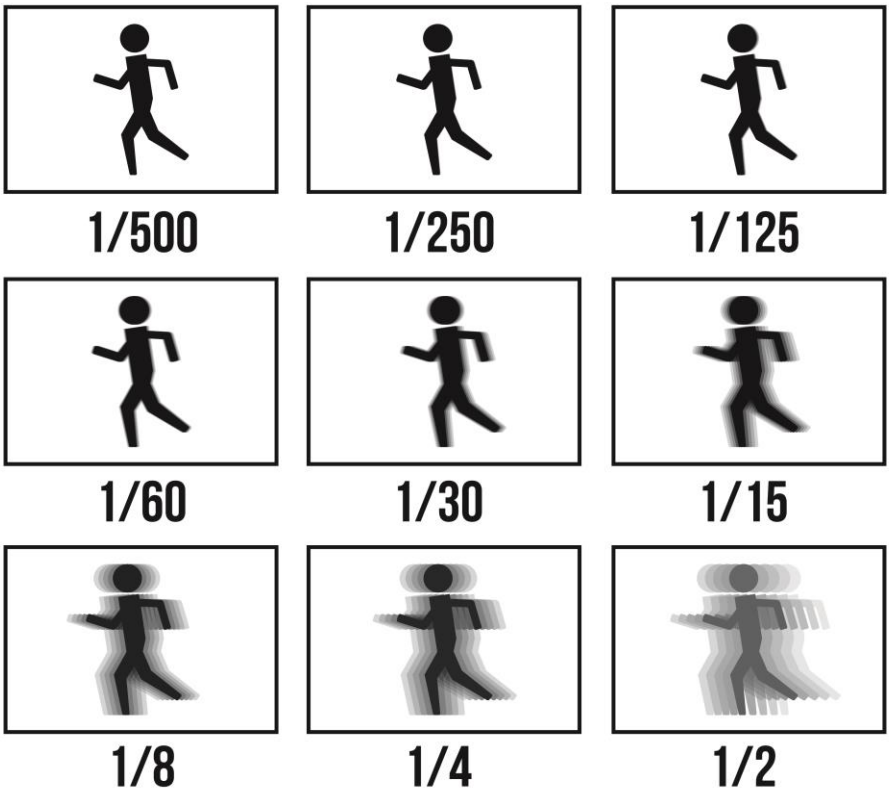
24-105 mm Lens

Simply take your focal length, multiply it by 2 and then divide by 1. For example, a focal length of 60 mm multiplied by 2 is 120. This means that a shutter speed of 1/120 of a second is safe enough to prevent camera shake at this focal length.

That said, many modern cameras and lenses have **image stabilisation** features that actually allow

you handhold your camera at much slower shutter speeds without risking camera shake.

The chart below illustrates the effect your choice of shutter speed will have on capturing motion in the scene you are photographing. Notice that the faster shutter speeds freeze the motion of the person running while the slower exposure times blur the motion.



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