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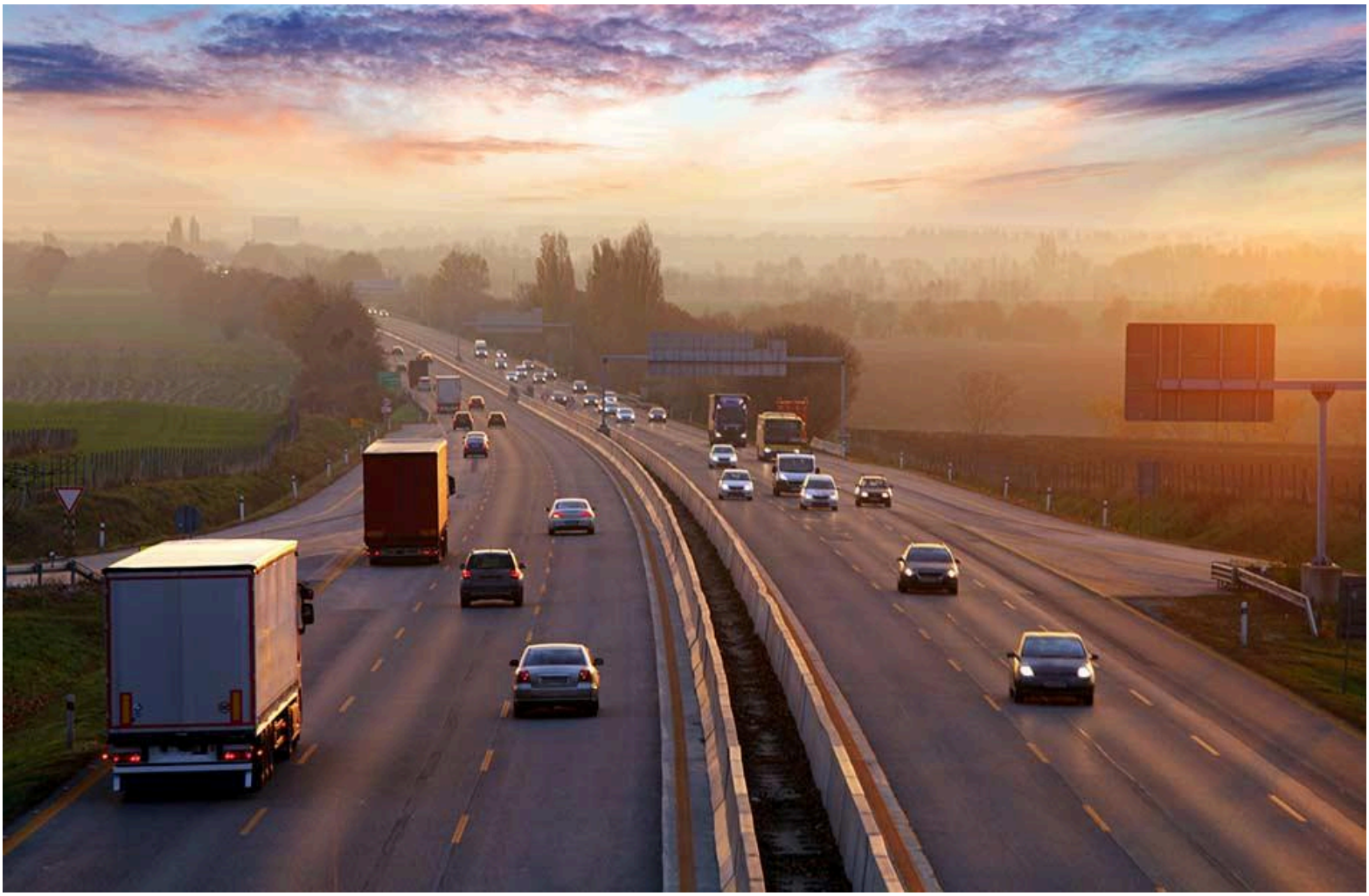
Shutter Speed Explained for the Beginning Photographer



Shutter Speed Importance In Photography

One of the obstacles that beginning photographers face is understanding exposure controls - that is, aperture, shutter speed, and ISO.

Not only do you need to develop working knowledge of each individually, but you also need to understand how they work together to create a well-exposed photo.

But understanding how these settings work together is a more advanced topic for another article. In the meantime, let the following serve as a basic introduction to these three settings:

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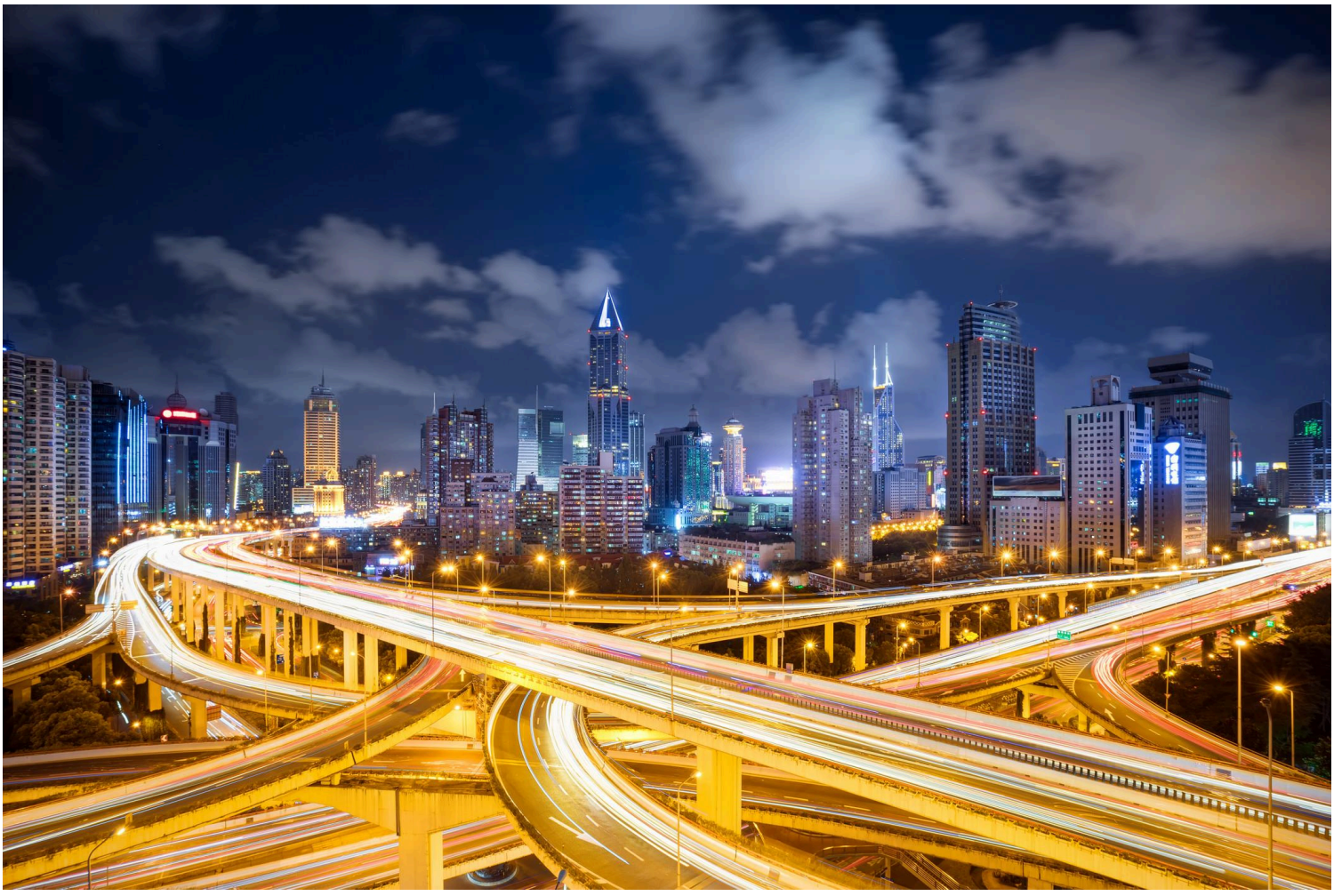
- Aperture controls the amount of light entering a lens and is responsible for depth of field, or the extent of the image that's in sharp focus.
- Shutter speed controls how long your camera's sensor is exposed to light and is responsible for the appearance of motion in the photo.
- ISO determines how sensitive your camera's sensor is to light while also being responsible for how much digital noise appears in the image.

In this article, we focus specifically on shutter speed to develop an enhanced understanding of what it is, what it does, and how to control it.

Shutter Speed Defined



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Shutter speed simply refers to the amount of time that the camera's shutter is open. The longer the shutter is open, the more light that passes through to the camera's sensor. Conversely, the shorter the shutter is open, the less light that's able to pass through.

An easy way to understand shutter speed is to liken it to your eyelids. For example, if you shut your eyes, then open them for 1/2 second without blinking, then shut them again, you've essentially created a 1/2 second exposure for your eyes. That is, for that 1/2 second, light was able to pass through to your retinas.

The same thing happens with your camera, lens, and shutter. A 1/2 second shutter speed means that when you press the shutter button, the shutter opens for 1/2 second, allows light to pass through to the camera's sensor, and then closes again.

The length of that action is determined either by your camera or you, depending on the camera mode you're using. We'll get into that more in a bit.

How Shutter Speed is Measured

Shutter speed is most commonly measured in fractions of a second, like 1/200 seconds or 1/1000 seconds. Some high-end cameras offer shutter speeds as fast as 1/8000 seconds.

But, shutter speeds can extend to much longer times, generally up to 30 seconds on most cameras. That time can be extended further into minutes or even hours by using what's called Bulb Mode, which is denoted with a B in your camera's menu system and gives you many creative options for using shutter speed.

Bulb Mode keeps the shutter open so long as the shutter is pressed down. Naturally, it would be impossible to keep your finger on the shutter button for a minutes-long or hours-long exposure, so when in need of exceptionally long shutter speeds, photographers use a shutter release that allows them to lock the shutter in the open position without having to actually hold the shutter button down.

The manner in which shutter speed is indicated on your camera depends. For example, if the shutter speed is a fraction of a second, most cameras only show the denominator, so if you're shooting at a speed of 1/500 seconds, you'll only see 500 in the viewfinder. If the shutter speed is one second or longer, it's often followed by a double quotation mark, like so: 1", meaning your shutter is open for one second.

Check the video above by Kingston Technology for a quick review of shutter speed.

Shutter Speed and Motion

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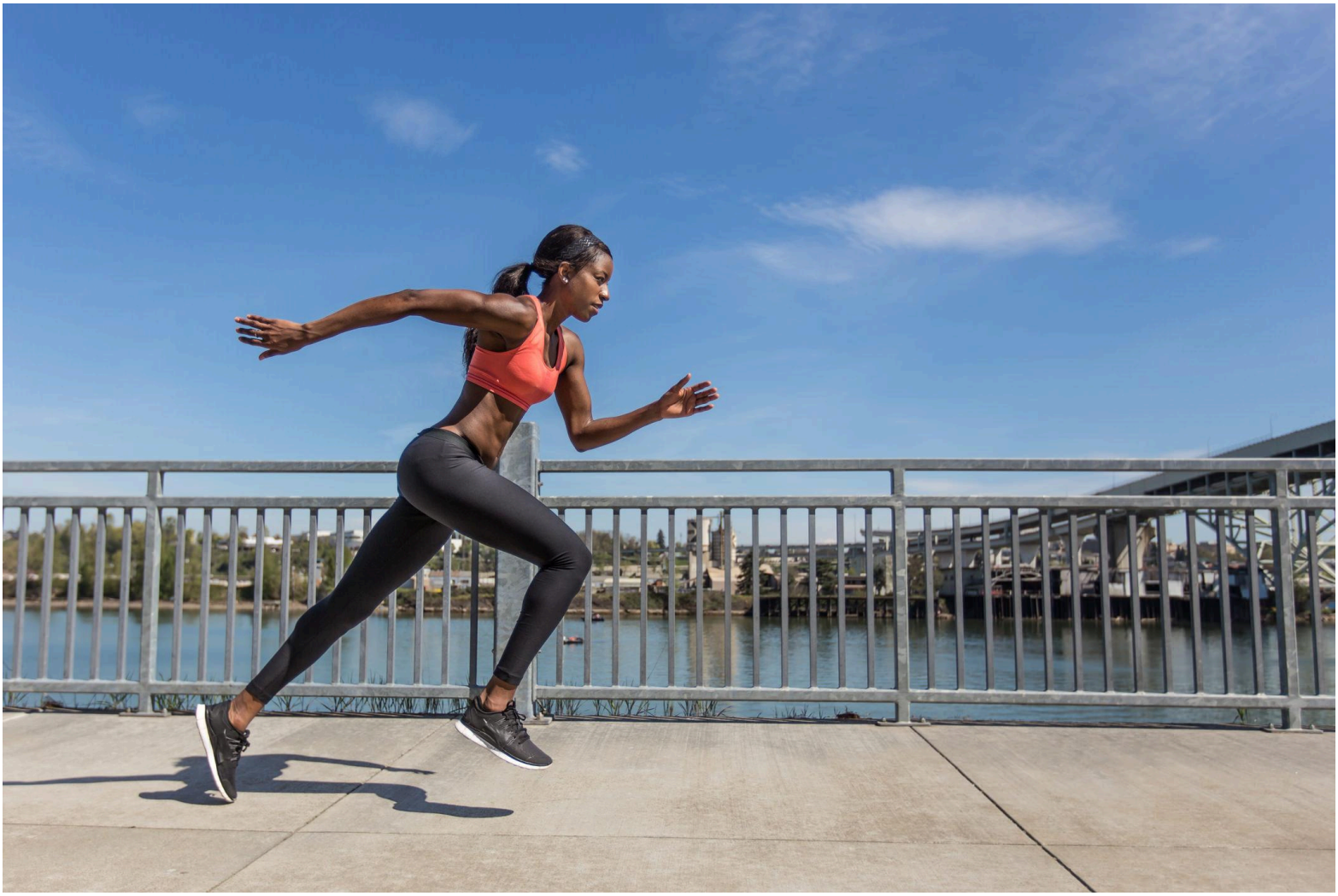

As noted earlier, shutter speed doesn't just control how long light is allowed to pass through the lens to your camera's sensor; it's also responsible for the appearance of motion in your photos.

Naturally, if you want to freeze the motion of a moving object, you need to use a shutter speed that's as fast or faster than whatever motion is occurring.

For example, to make the runner in the photo above appear frozen in time, the photographer used a fast shutter speed, say, 1/1000 seconds.

It's important to note that the direction of the motion in relation to the camera position will influence the needed shutter speed. Here, since the runner is perpendicular to the camera, a faster shutter speed is needed. However, had the photographer been positioned in front of the runner with her coming toward the camera, a slower shutter speed, say, 1/500 seconds, could be used.

The distance you are from the subject also impacts the speed that's needed to freeze motion. The closer you are, the faster the shutter speed is required because the subject's motion in the frame is more pronounced. This is true of the focal length of the lens you use as well - you can use a slower shutter speed with a wide-angle lens than you can with a telephoto lens, again, because the subject's size in the frame is more pronounced when using a telephoto lens.

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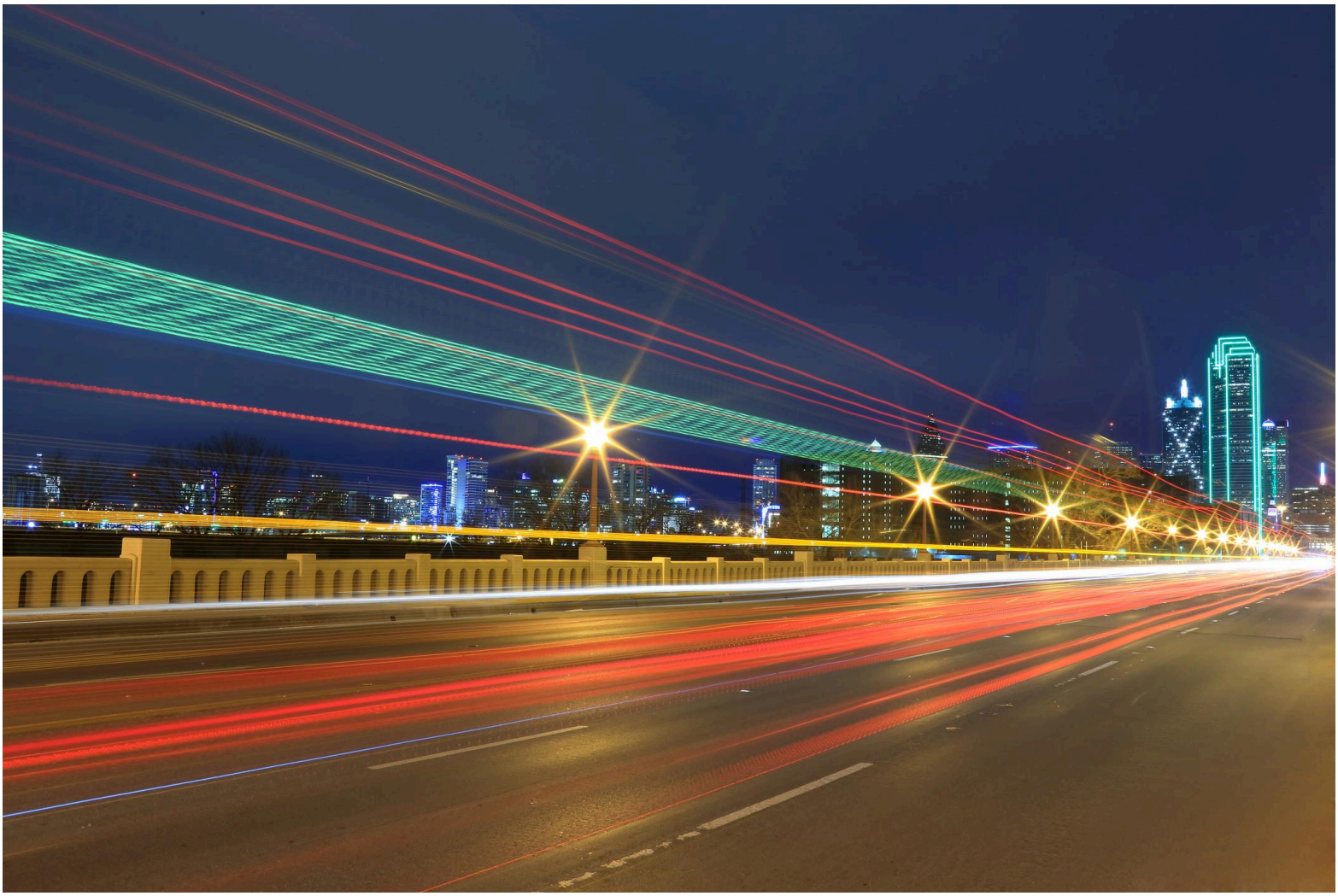
Here's a few suggested shutter speeds for freezing the movement of different subjects:

- A person walking at a normal pace: 1/125-1/150 seconds
- A person running: 1/500-1/1000 seconds
- An animal running: 1/500-1/2000 seconds
- A bird in flight: 1/800-1/2000 seconds
- A moving vehicle: 1/500-1/8000 seconds



Of course, blurring motion requires a slower shutter speed to get the kind of movement you see in the image above.

In this case, a speed of just 1 second might be enough to get the light trails seen in the image above. For slower moving subjects, like a person walking, you might need a shutter speed of 5-10 seconds or longer to get blurred movement.

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Therein lies one of the difficulties with creatively using shutter speed: the speed of the subject will, in part, dictate what shutter speed you need to ensure that the subject is either frozen or blurred. That means you'll often need some trial and error to get the right shutter speed for the visual effect you want.

Another issue with slower shutter speeds is that you cannot effectively hold the camera in your hand and get a clear, sharp photo like the one above. That means you'll need to use a tripod to stabilize your camera. A general rule of thumb is that once your shutter speed slows to about 1/60 seconds, you'll need to support the camera with something other than your hands.

Shutter Priority Mode: A Quick Explanation

Shutter priority mode (indicated at T or TV on your camera's mode dial) is a semi-automatic shooting mode that prioritizes shutter speed over the other two exposure settings (aperture and ISO).

That means that when you select this mode, you get to determine what shutter speed the camera will use (as well as the ISO), and that shutter speed will remain constant until you change it.

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Even better, the camera will select an aperture value that works with the shutter speed you select to get a well-exposed image. So, you get increased creative control over your images but you don't have to be overwhelmed with choosing all three exposure settings for the shot. That makes shutter priority mode a good way to begin taking more control over your camera settings without diving straight into using fully manual mode.

For example, let's say you want to create an image like the one above in which you freeze the movement of a dog running towards you. Let's assume that a shutter speed of 1/1000 seconds is required. So, you simply turn your camera's mode dial to T or TV, dial in a 1/1000 second shutter speed, ensure the ISO is at 100 or 200, and frame up the shot. When you press the shutter button, the camera will determine the aperture that's needed to get a well-exposed image given the shutter speed and ISO settings that you've selected.

If that still sounds a bit scary, check out the video below by Mike Browne in which he takes us step-by-step through the process of using shutter priority mode:

Like all things in photography, becoming adept at using shutter speed to your advantage will require that you practice using it - a lot.

To do so, try a simple exercise in which you photograph the same moving subject using varying shutter speeds in shutter priority mode.

For example, set up your camera on a tripod facing the sidewalk in front of your house. Have a friend or family member run by as you take their photo at varying shutter speeds. Start with something like 1/1000 seconds, then work your way down to a very slow shutter speed, like 1 second.

Review the series of images, noting how the motion of your subject becomes increasingly blurred as the shutter speed is extended.

That sort of exercise will also give you a chance to work with ISO as well, because you'll likely need to make adjustments to it to maintain a proper exposure as you change the shutter speed, much like Mike had to do in the video above.

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