# Chapter 4
# Controlling Sharpness

*The early morning sun hits a eucalyptus tree on Montecito Peak outside of Santa Barbara, California.*

One of the first things you notice about a photograph is whether or not it is sharp. Extremely sharp photographs reveal a richness of detail, even more than you would normally notice in the original scene. If the entire image isn't sharp, your eye is immediately drawn to the part that is. If your photos aren't as sharp as you want them to be, you can analyze them to see what went wrong.

• **Focus**. If the entire image looks soft, or if your main subject looks soft but other parts of the photograph are sharp, your camera was improperly focused or you may have been too close to the main subject.

• **Depth of Field**. If the central part of the scene is sharp but the background or foreground is less so, you didn't have enough depth of field.

• **Camera Movement**. If the image is blurred all over, with no part sharp, the camera moved during the exposure. Some points appear as lines, and edges are blurred.

• **Subject Movement**. When some of the picture is sharp but a moving subject appears blurred, your shutter speed was too slow.

In this chapter you'll see how to ensure your photos are sharp when you want them to be and how to use blur creatively.

# Eliminating Blur From Camera Movement

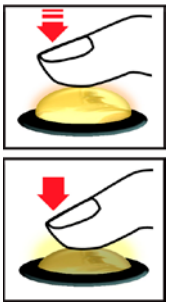
**Extension**

*Click for a PDF extension on tripods and other camera supports.*

Unwanted camera movement when the shutter is open is one of the major causes of unsharp photographs. You can reduce this problem in bright light and when using flash simply by holding the camera steady and depressing the shutter button smoothly—pausing halfway down until focus locks. At slow shutter speeds, such as those you get in dim light, particularly with a long focal length lens or a lens zoomed in to enlarge a subject, you need a camera support.

*The camera was steady in the left picture and moved in the right one.*





*Press down the shutter button very smoothly—never jab at it. Pause halfway down until focus locks.*

## Holding the camera

As you zoom the lens in on a subject, you increase the focal length of the lens. As you zoom back out, you reduce it. On an SLR camera you can do the same thing by changing to a telephoto or wide-angle lens. As the focal length changes, so does the minimum shutter speed you need to hand-hold the camera without getting any blur from camera movement. The rule of thumb is never to hand-hold the camera at a shutter speed lower than your lens' focal length. For example, when using a 35mm lens you can use a shutter speed of 1/50. When using a 200mm lens, you should increase the shutter speed to at least 1/250.

When taking a photo without a support, brace the camera against your face. Just before taking a shot, inhale deeply, then exhale and hold your breath while smoothly pressing the shutter button down.

**TIP**

SLR cameras have a mirror that swings up when you take a picture so light can reach the image sensor. As light as this mirror is, it can set off vibrations when it swings. To prevent this, many cameras have a feature called *mirror lockup*.

## Supporting the camera

When not using flash in dim light, you need to support the camera to prevent blur in your images. One way to do this is to lean against a wall or tree and brace yourself with your elbows tight to your body. You can also find a table, branch or railing to rest the camera on. For real stability many cameras have a tripod socket so you can attach it to a tripod when you want sharper pictures.

## Using the self-timer or remote control

*A self-timer icon.*

Almost all digital cameras have a self-timer and a few have a wireless remote control. Although often used to give you time to get into the picture, the self-timer is also a great way to reduce blur when photographing in dim light. Just place the camera on any secure surface, compose the image, and use the timer or remote to take the picture. Don't stand in front of the camera when you press the shutter button to start the timer. If you do so, you'll prevent the camera from focusing correctly. If using the timer to photograph yourself, point it at something at the same distance you will be after scrambling into position and press the shutter button to lock focus and start the timer.

*When using the viewfinder for both horizontal and vertical photographs use your right finger to press the shutter button and your left hand to support the camera.*

*When using the monitor (left), hold the camera with both hands and brace your elbows to your sides.*

*If your monitor swings and tilts (right), you can steady the camera on the ground and even shoot up at flowers and other small subjects.*

*Monopods are light, collapsible, and easy to carry. Courtesy of Gitzo at (www.gitzo.com).*

*There are many situations in which you can get some additional support from the environment around you. Lean against a wall or tree and brace yourself with your elbows tight to your body. You can also look for a branch, railing, table or other surface to rest the camera on.*

# Image Stabilization

Animation

*Click to explore how image stabilization reduces but doesn't eliminate blur caused by camera movement.*

If a camera moves during an exposure, it causes blur in the image. This is more likely to happen at slow shutter speeds, when shooting close-ups, or using a long focal length lens. To reduce this blur, some cameras have image stabilization systems. These systems use a sensor, often a gyroscope, to recognize camera movement and then try to compensate using a variety of techniques. The process goes under a confusing variety of names including *image stabilization* (IS), *vibration reduction*, and *anti-shake*. Manufacturers claim up to 4 stop increases before blurring from camera shake is noticeable in an image. This means that if you can shoot safely at 1/60 second without image stabilization, you can shoot at 1/8 with it.

*A tripod is a necessity for some kinds of photography.*

• **Lens-based image stabilization** works by moving a prism in the camera or an element in the lens to redirect the light path to compensate for unintended movement. As the camera moves in one direction, the prism or lens element move in the other. This is the most effective way to stabilize images, but also the most expensive.

• **CCD-based image stabilization** quickly shifts the CCD to offset motion of the camera.

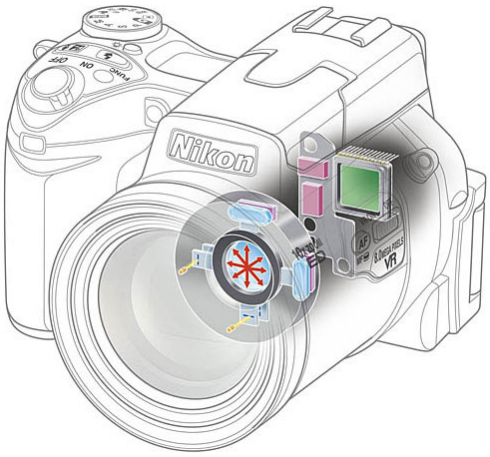
• **Digital or electronic image stabilization** shifts the image on the sensor to compensate for motion. It's like watching a baseball infielder moving around to stay under a windblown pop-up. When this technique is used, not all of the sensor's pixels can be used for the image. Some of those on the border have to be reserved for the shifting image projected by the lens. Another technique is to try to remove the blur from an image with digital processing after it has been captured.

• **Pseudo image stabilization** just increases the ISO so the camera can select a faster shutter speed.

*Using a beanbag like the Pod along with the camera's self-timer is a good form of image stabilization. Courtesy of Pop Multimedia (www.thepod.ca).*

When the camera has a fixed lens, it doesn't matter which approach is used. However, on cameras with interchangeable lenses it does matter. If the stabilization system resides within the camera body it will work with any lens, if it resides within the lens, it only works with lenses that have incorporated it.

When thinking about image stabilization, keep in mind that it's always been available in the form of a tripod, monopod, beanbag, or a flat surface on which to rest the camera. You can further increase stability by using the self-timer or remote control to release the shutter, and mirror lockup to reduce vibrations.




*Nikon's image stabilization, called VR, for Vibration Reduction, and Canon's IS move a lens group to counteract camera motion.*