

Getting Sharp Images

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Getting sharp images is critical for most photographers. Failure to do so is usually due to one (or more) of the following reasons:

- Motion blur (camera and/or subject movement)
- Focus errors (focus on incorrect subject, inaccurate focus, inadequate depth of field)
- Poor quality lens
- Inadequate sharpening post-capture (digital only)

Pre-Capture Sharpness

Sharpness in your images is principally assured during capture by attention to: (a) getting the correct focus and (b) avoiding camera and subject motion blur. Factors that specifically affect pre-capture sharpness include:

- Choice of lens
- Choice of aperture
- Depth of field (DOF)
- Shutter speed
- Correct use of autofocus (AF) or manual focus (MF) system
- Use of tripod or other support
- Mirror vibration (SLR cameras)

Depth of Field

DOF is critical for creative photography and for getting sharpness where you need it in your photographs. Shallow DOF is typically used to blur 'busy' backgrounds, especially for portraits, and is most readily achieved with telephoto lenses and/or the use of large apertures. Note that very shallow DOF for portraits, for example, may result in sharp eyes, but blurred ears and noses. Shallow DOF for group portraits may result in one or more individuals being out of focus. Large DOF is often employed for landscapes, and is typically achieved with wider angle lenses and smaller apertures.

Note however, that the distance from lens to subject is the most important component of DOF. Thus, macro photography, where camera to subject distance is very short, has extremely narrow DOF, while landscapes normally enjoy large DOF. For maximum DOF, learn the *Hyperfocal Distance* for each lens you own. When the lens is focused at this distance, the depth of field extends from half the Hyperfocal Distance to infinity.

Motion Blur

"Camera shake" is the commonest cause of unsharp images. Selecting the appropriate shutter speed for your subject and lens is critically important in obtaining a sharp image. Here are some general rules, although exact values will depend on your ability to hand hold your camera:

- Shutter speed should be at least 1/focal length:
 - 1/50 for 50 mm; 1/200 for 200 mm
- Shorter shutter speeds may be required for digital cameras with a "crop factor":
 - 1/75 for 50 mm; 1/300 for 200 mm
- Vibration Reduction technology (VR, IS, OS) can increase shutter speed by 2-3 stops:
 - 1/20 for 50 mm; 1/75 for 200 mm

A solid camera support is essential for obtaining critical sharpness in your images. Do not skimp on this purchase – it makes no sense to pay \$1000+ on a quality camera and lens(es), then mount it on a \$50 tripod.

Even if your camera is securely mounted, vibration may still occur through (a) depressing the shutter button or (b) mirror vibration. The former can be prevented by using the self-timer or (preferably) by using a remote release device. Many SLR cameras offer the ability to lock the mirror up prior to releasing the shutter. Use of this mirror lockup feature will significantly improve image sharpness at shutter speeds of ½ to 1/30 second.

Know your Autofocus (AF) System

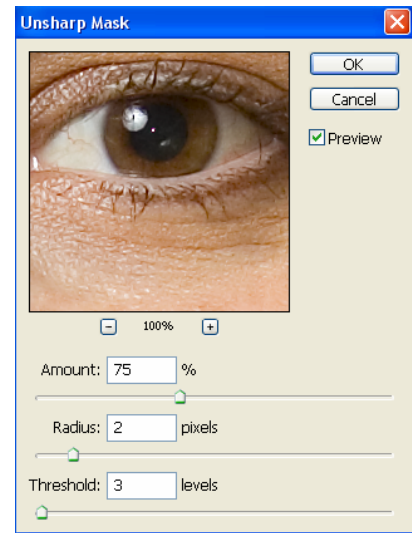
It is important to understand your camera’s autofocus system. Modern digital and film cameras have sophisticated AF systems, which may not always operate as you intend.

Post-Capture Sharpening

Film shooters that pay attention to the pre-capture variables will be rewarded by sharp images. Digital photographers, however, may find that their images lack critical sharpness out of the camera, and these will require additional sharpening using image editing software.

- Sharpen Filter (not recommended)
- Unsharp Mask (USM) Filter
- ‘Smart’ Sharpen (Photoshop CS2)
- Other PS methods (see Scott Kelby’s book for details)
- Photoshop Plug-Ins

Good results can be obtained with any of these methods. However, the key points are: (a) sharpen after all other image editing is complete, (b) sharpen appropriately for the final output, and (c) do not over-sharpen. Scott Kelby’s suggestions for USM settings are reproduced below:



	Amount	Radius	Threshold
Soft subjects (flowers, puppies, people etc.)	150	1	10
Portraits	75	2	3
Moderate (product shots, home interiors, landscapes)	225	0.5	0
Maximum (visibly OOF or well-defined edges)	65	4	3
All-purpose	85	1	4

Suggested Reading

- The Photoshop CS2 Book for Digital Photographers (Scott Kelby)
- Sharpening 101 (Thom Hogan) - <http://www.bythom.com/sharpening.htm>
- Tripod 101 (Thom Hogan) - <http://www.bythom.com/support.htm>
- DOFMaster - <http://www.dofmaster.com/>