UNDERSTANDING SHUTTER SPEED

How it works, Why it matters

Shutter speed is the amount of time your camera's shutter stays open, allowing light to reach the sensor. It is measured in fractions of a second (1/250, 1/60, 1/4, etc.) or in full seconds (1", 2", 10", etc.).

- **Fast shutter speeds** (like 1/500 or 1/2000) open and close quickly.
  - Less light enters the camera.
  - Motion is frozen or stopped.
- **Slow shutter speeds** (like 1/30, 1/10, 1", 2") stay open longer.
  - More light enters the camera.
  - Motion becomes blurred, either from the subject moving or the camera moving.

The **B (Bulb)** setting allows the photographer to hold the shutter open for very long exposures.

Shutter speed is one of the three parts of the **exposure triangle** (with aperture and ISO). When you change shutter speed, you must adjust the f-stop to maintain correct exposure, also known as recipricol exposure. Use your in-camera meter to guide you.

How Motion Is Captured

Shutter speed determines how movement appears in a photograph:

- **Freeze motion:** fast shutter speeds (1/250–1/2000+) faster the subject is, the faster the shutter speed needs to be to freeze the motion.
- **Show motion blur:** slow shutter speeds (1/30, 1/15, 1/4, 1", etc.),
- **Camera shake**: occurs when the shutter is too slow for hand-holding, and the image is blurred.

Most photographers can hand-hold safely at 1/60–1/125. Anything slower usually requires a tripod and remote release (or the self-timer) to stabilize the camera and minimize camera shake. However, if the subject is moving, it will be blurred.

Telephoto Rule
When using long lenses, your shutter speed should be close to the focal length of the lens to avoid camera shake.

Photographed using a tripod at a 2 second shutter speed to capture the light traiils from vehichles, the vehicles disappear because they were moving thru the 2 sec exposure.

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CHOOSING THE RIGHT SHUTTER SPEED

Is the subject moving?

Faster shutter speeds freeze motion.
Slower speeds show motion blur.

Is the subject still?

Use a shutter speed you can hand-hold, or use a tripod if it drops below 1/60. If your photos show camera/motion blur at 1/60, use 1/125 instead.

What are the lighting conditions?

Bright light allows faster shutter speeds.
Low light often requires slower speeds or higher ISO.

Exposure is always a balance. While low ISO keeps noise down, you may need to raise ISO to get the shutter speed that freezes motion and the aperture that gives the depth of field you want. A bit of grain is normal in these situations and can be reduced later in post-processing.

Photographed with a fast shutter speed of 1/250 to freeze the motion of the ride.

SHUTTER SPEED EXERCISE

Shutter Speeds (Freeze vs. Blur)

Photograph the same **moving subject** (outside during the day, with the sun behind you (the camera position) or to the left or right of camera, do not have the light behind the subject. Use at least several different shutter speeds:

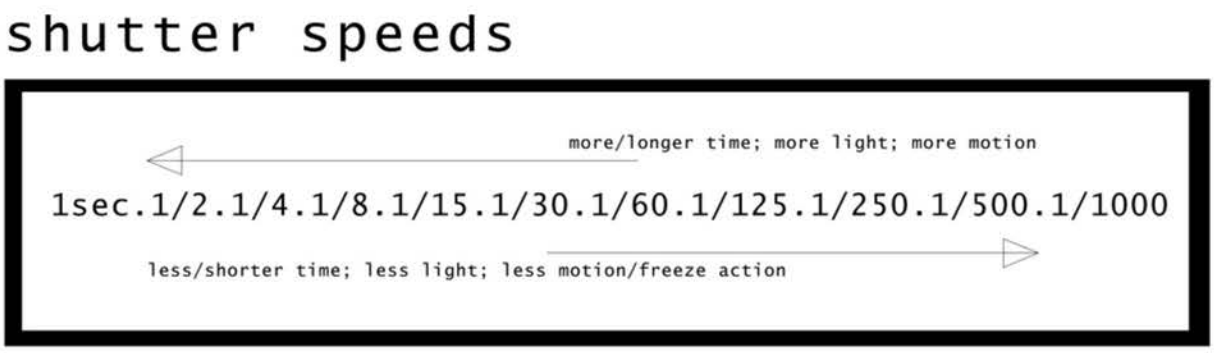
- **Select an ISO** (do not use auto ISO) Keep ISO constant for all of the frames. A good starting point would be to use ISO 100 in bright sunlight, or use ISO 400 t0 1000 in the shade or a cloudy day
- Use **M (manual mode)** Adjust the f-stop each time to maintain correct exposure. (Use the in-camera light meter to have a correct exposure).
- or use **Shutter Priority** where you pick the shutter speed and the camera selects the f-stops, be sure the exposure looks good in the camera, adjust exposures setting as needed

Suggested shutter speeds – make the exposure in order, from the slowest to the fastest (or fast to slow):

- 1/2 second
- 1/4 second
- 1/15
- 1/60
- 1/125
- 1/250
- 1/500

Compare how motion changes from blurred to frozen.

You could do the exercise several times with subjects that are moving at different speeds, possibly someone walking, running, riding a bike or driving a car. This will give you an idea of the minimum shutter speed you needed to freeze motion.



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PANNING IN PHOTOGRAPHY

Panning is a technique where the photographer moves the camera with a moving subject during the exposure, using a slower shutter speed so the subject stays relatively sharp while the background becomes a streaked blur.

The result is an image that shows speed, direction, and motion, even though the subject itself appears frozen or mostly sharp.

WHY USE PANNING?

Panning is used to create a sense of movement and energy. It works especially well for:

- People walking or running
- Cyclists
- Cars, motorcycles, or trains
- Animals moving across a scene
- Kids playing or sports action

The technique visually separates the subject from the background by turning the background into motion blur.

Panning is best suited for subjects moving from left to right or right to left in relation to the camera position. It does not work well with subjecting moveing towared or away from the camera position.

HOW PANNING WORKS (THE MECHANICS)

Panning relies on three things working together:

- **A moving subject**
  - The subject must move across your frame, not toward or away from you.
- **A slower shutter speed**
  - Typical panning shutter speeds range from:
    - 1/8
    - 1/15
    - 1/30
    - 1/60
    - 1/125 (for very fast subjects)
  - Slower speeds = more background blur
  - Faster speeds = less blur, easier to control
- **Smooth camera movement**
  - You **rotate your upper body or pivot your feet to follow** the subject's motion at the same speed they're moving.
  - The **key is matching the subject's speed** so they remain sharp while the background streaks.
  - A good rule is to start following the subject with the camera and then press the shutter release.

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WHAT MAKES A GOOD PAN?

- **Smooth, even movement**
  - No jerky motions. Follow through after pressing the shutter.
- **Subject sharpness**
  - At least part of the subject—often the head or torso—should be in focus.
- **Background blur**
  - The background should streak horizontally, showing direction and speed.
- **Consistent framing**
  - Keep the subject in roughly the same place in the frame as you move.

HOW TO PRACTICE PANNING

1. **Choose a predictable moving subject**
   - People walking, cyclists, or cars moving at a steady speed.
2. **Set your shutter speed**
   - Start with 1/30 or 1/60—these are easier for beginners.
   - It can be slower 1/15, 1/ 8 etc., but too much blurring may occur.
3. **Stand with feet shoulder-width apart**
   - Rotate your torso smoothly as the subject approaches.
4. **Pre-focus**
   - Use continuous autofocus (AF-C/AI-Servo) or pre-focus on a spot they'll pass.
5. **Track the subject**
   - Begin following them before you press the shutter.
6. **Press the shutter while still moving**
   - Don't stop—keep moving through the shot.
7. **Review and adjust**
   - Too sharp? Slow the shutter.
   - Too blurry? Speed up the shutter or improve your tracking.

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