Dance Photography (copyright Peter Norvig)

Motion Blur
If you set your camera to the green "auto" shooting mode, it will often choose a shutter speed of 1/60 sec, which is perfect for someone posing still for a snapshot, but will give you motion blur with a fast-moving dancer. What shutter speed do you need to freeze the action? It depends on the action. Here's a rough guide:

- 1/60 second for a subject posing motionless
- 1/125 second for a subject standing still but swaying
- 1/250 second for a subject walking
- 1/500 second (or faster) for fast movements (running, jumping)
- The following three images have shutter speeds of 1/60, 1/125 and 1/250 secs, respectively:

| 1/60 sec | 1/125 sec | 1/250 sec |

- At 1/60, you can see severe motion blur in the dancers at the left who are bowing and slight blur in the dancer who is standing still but raising her arms (click through to see a larger version). At 1/125 there is blur in the hands, right leg and face of the running dancer (but not in the planted left foot). At 1/250 there is blur in the dancer who has just landed a jump. You can see it in the closeup crops below: the face has motion blur (because the whole body is still moving downwards) but the right foot is very sharp (because its motion has been stopped by the floor):

Crop of 1/250 sec (motion blur)

Crop of 1/250 sec (sharp)

- Now let's see some photos where motion blur is not a problem:

Motionless pose at 1/125

Crop of Motionless at 1/125

Fast Motion at 1/400

Jump at 1/500   **Crop of Jump at 1/500**

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- **Choose a fast enough shutter speed** (assuming there is enough light to do so). Use the guidelines above, but note that even 1/500 will not freeze *all* motion; for example in "Another Crop of Jump at 1/500" above, you can see motion blur in the rear shoe.
- **Zoom out:** when you zoom in you magnify everything, including motion blur. By zooming out and showing the whole stage, motion blur will be less noticeable.
- **Shoot when the action has paused**: At the end of a movement, or at the top of a jump, the dancer is still. Wait for that moment. In "Jump at 1/500" above, the picture was snapped just at the top of the leap. This not only makes the jump seem more impressive, it also means there is less motion (and thus less motion blur) because at the top the dancer is neither moving up nor down. In "Jump at 1/125" below, the picture was timed at the top of the dancer on the right's jump; we see in the crop she is very sharp. But other dancers who are not at the top of their jump have significant motion blur (as you would expect at 1/125).
- **Pan with the motion**: Move the camera to track the dancer's movements. The dancer will not be blurred (but the background will be). By panning the camera with the Prince as he lifts Clara in the "Pan at 1/40" image below, we handle the very low light in this scene with a shutter speed of 1/40--about six times

slower than we would normally need without the pan. Clara has motion blur because she is twisting more quickly than the Prince (and the camera) are moving. You can tell that this shot is a pan because the Christmas tree lights are elongated horizontal lines, not round points of light, indicating that the camera has moved horizontally.

- **Try, try again**: Suppose you can only get to a shutter speed of 1/60, you want a sharp picture of a moving dancer's face, and you don't care about blur of the arms and legs. If you take just one shot, chances are the face will have motion blur. But if you take 20 shots, chances are that at least one will happen to have caught a moment when the face is motionless and thus sharp.
- **Use flash**: In my daughter's dance studio, flash photography is not allowed, so I won't cover it. If it is allowed in your studio, and it will not be interfering with the dancers or watchers, you might want to check out [Strobist](#) or [PhotoNotes](#) or [photography on the net](#) for some great advice.

Here's one more example of the difference a stop can make: in the first row below you can see my photo, at 1/160 sec, with close-up crops of the hand and face. In the second row is a great shot of the same dancer from the fine portfolio of [Alexander and Natalie Arsky](#), fellow parents in my dance company. They used 1/320 sec, and you can see that there is less motion blur, particularly in the hands. Even though at ISO 5000 they are pushing the bounds of what the camera can handle without introducing noise, to my taste, Arsky's photo at 1/320 is the better one because of the lack of motion blur, and because it captures a better pose. Noise is not a problem.

1/160 sec   1/320 sec