

Use of Stroboscopic Lighting Techniques in Model Shooting in The Studio

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Abstract. Lighting in the field of photography is the main and very important thing. There are many types and variations of lighting, including lighting techniques using artificial light sources. Sources of artificial lighting in photography include flash light sources, flash lights are used as additional sources or substitutes for natural light sources (available light). The Stroboscopic technique is a variation of lighting using a flash, the process involves the use of repeated flashes of light as the photographic subject moves over a certain period of time. This repeating light creates an interesting effect that freezes over and over again. Another thing is that it allows a photographer to capture movement in a unique and creative way. This technique is often used to clearly record action or movement, as repeated flashes of light allow the subject to be seen in various positions over the shooting time period. For example, in sports photography, Stroboscopic techniques can be used to capture athletes in fast movements such as running or jumping, likewise when a dancer is performing, we can stop their movements repeatedly but still in one shooting frame. The background to the emergence of the stroboscopic technique is to add uniqueness and a new style to photography, in addition to presenting a dynamic and dramatic aspect to the image. This allows photographers to experiment with movement effects and precise shooting timing thereby creating unique and visually interesting photos. This technique requires a good understanding of camera and lighting settings as well as creativity in their use to achieve interesting and desired results.

Keywords: Stroboscopic, Flashlight, Artistic

1. Introduction

The field of photography is an art field that contains many techniques for taking an image. When talking about aesthetics, a photographer will use a compositional approach, but when discussing lighting, there are quite a lot of areas that a photographer can choose from. One of them is the strobe/strobist technique, this technique is a technique that involves the use of an external flash mounted outside the camera to create creative and dramatic lighting in photos.

In the strobe technique, the photographer uses a flash that is triggered wirelessly or uses a sync cable to trigger the flash remotely. This allows the photographer to control the direction, intensity and angle of lighting more freely than using the camera's built-in flash. By using strobe techniques, photographers can create more interesting lighting effects, with the appearance of dramatic silhouette lighting and shadow effects, and are able to better separate the subject from the background. This is better than using a flash installed on the camera. The element of uniqueness and novelty that can be presented in this shooting technique is of course from the unusual results where this lighting technique presents a

continuous series of movements in one shot. This is certainly different from model or dance photography which only captures single movements. This lighting technique requires a photographer's understanding and carefulness in choosing the right moment.

The Stroboscopic technique itself is a development of the strobist/strobe technique described above [2]. This technique is intended to capture the subject repeatedly with the aim of producing interesting visuals in one shot. In the world of modern and even contemporary photography, this technique can be used as an alternative shooting technique in fashion shoots or performance photos, because it provides more motion recording so that photo viewers can see a series of dynamic movements, unlike ordinary freeze photos which only show one single movement.

Hopefully, this photographic work entitled 'Use of Stroboscopic Lighting Techniques in Model Photography in the Studio' can provide benefits to institutions, especially photography study programs, the world of photography, especially lovers of the Strobist technique and also individual writers so that they can continue to develop insight and knowledge in the field of photography.

2. Research Objectives and Benefits

The main objective of the results of this research is in the form of work that presents the art of photography and technical understanding of Stroboscopic lighting with human subjects. The following are some of the objectives that the author wants to convey from the results of this research later:

- (a) Photographic works that can be used as references for lecturers or students in creating similar works
- (b) Provide technical knowledge on how to and tricks for shooting using Stroboscopic lighting techniques
- (c) Enrich accredited research journals for photography study programs sourced from home base lecturers

3. Methods

This research process emphasizes qualitative methods, namely focusing on the results and quality of shooting. In other processes, the author considers several aspects that influence the shooting process, such as room conditions, equipment specifications, color and movement. However, in this research the author focuses on indoor lighting. Therefore, the author divides it into several work steps that focus on the experimental shooting process, as follows:

3.1 Technical

This aspect includes how this shooting technique can be realized. In this aspect the author focuses on preparing the tools and props to support shooting. This aspect examines things that are physically identified, if in photography it is; camera, lens, lighting, and so on. Does the type, type and brand used affect the shooting results?

3.2 Non technical

In this aspect the author looks for literature and other reference sources including online sources as well as how to understand the concept of stroboscopic shooting which is simple but effective and interesting.

3.3 Comparison

Conduct a comparative study by comparing the place (studio), equipment and results of the author's photo shoot with similar works. So that the author can learn and develop techniques that have been done previously.

3.4 Main Research Tools

The main device is a vital device that functions as an image recording tool, including a vital device in the shooting process using a digital camera. These devices are;



Fig. 1. Digital Camera DSLR Canon EOS 7D (18 MP)
And Canon Lens EF 18-135mm



Fig. 2. Memory Card 32 GB and Camera Tripod



Fig. 3. Speedlite canon 600 EX RT and 580 EX II
And Stand Mounting Speedlite model stand and press



Fig. 4. Synchron Cable and Standard Photo Studio

3.5 Supporting devices

Supporting devices are devices that support after the shooting process is carried out, such as computers, software/applications and digital storage devices. What supports a photo shoot in the current digital era is the process of light touch up (minor improvements) and grading (perfecting color saturation and image brightness). The software used in this editing tool is Adobe Photoshop and Adobe Lightroom.

3.6 Manifestation Stage

At this stage the author turns the results of the literacy search and references into the result of an interesting and aesthetic work of photography creation, with the following steps:

Reference Exploration

At this stage the author looks for as many visual references and shooting techniques as possible that will be needed later during the photo shoot, including

- (a) Looking for photo references with the same or similar themes.
- (b) Study stroboscopic shooting references through various media and literature
- (c) Look for movement or dance references that suit the shooting concept
- (d) Determine and conclude the most appropriate tools and techniques for shooting

Technical Exploration

At this stage the author tests technical devices such as cameras and main lighting sources (speedlite/flash), as follows:

- (a) Test the camera's ability to use a low shutter speed, ISO and aperture to suit your shooting plan later
- (b) Test flash capabilities with Multi mode.
- (c) Testing the use of single and dual flash as master and slave
- (d) Test the off shoe capability either wirelessly or with cable sync



Fig. 5. Experiment with Multi Flash settings on the Speedlite

Execution/Improvisation

This process was carried out after the author obtained accurate data from previous observations, so that the author made minimal mistakes when taking photos.

- (a) Hire dancers in Betawi costumes because Betawi dances have fast movements and have many variations.

- (b) Betawi dance was chosen because the colors of the clothes are quite striking and the colors are bright, very contrasting with the black background, so that the shooting results can be clearer and more contrasting.
- (c) Varying the recording speed, ISO, Hz and multi flash settings to get the expected results during the previous trial process.

4. Results and Discussion

The following are the results of a photo shoot using stroboscopic lighting techniques on a Betawi dancer model in the studio. In this discussion the author only focuses on explaining the technical side of shooting and lighting.



Fig. 6. Taken with Canon EOS 7D, EF 18-135mm Lens (Canon)

Table 1. Dances 01 Photo Exif

<i>Shutter Speed</i>	<i>Aperture</i>	<i>ISO</i>	<i>Focal Length</i>	<i>Multi</i>	<i>Hz</i>
3 second	f/5	200	20mm	4	3

Discussion of Dances 01

This first photo records a Betawi dancer with sweeping hand movements above, moving from left to right. The shutter speed setting is set to 3 seconds with the aim of recording longer movements, while the flash setting with multi (stroboscopic) mode is set to 4 (four) flash flashes with the aim of recording 4 dancer movements sequentially. The delay speed between flash flashes (Hz) is set at 3 Hz, so that the motion recording is not too dense. The results can be seen in the form of recordings of four dance movements with a focal length of 20mm and an eye level shooting angle. The reason for choosing the shooting angle from the front is so that the dancer's position and movements can be clearly seen. The conclusion is that flash flashes can freeze moving objects even with a low shutter speed.



Fig. 7. Dances 02 Taken with Canon EOS 7D, EF 18-135mm Lens (Canon)

Table 2. Dances 02 Photo Exif

<i>Shutter Speed</i>	<i>Aperture</i>	<i>ISO</i>	<i>Focal Length</i>	<i>Multi</i>	<i>Hz</i>
4 second	f/5,6	200	20mm	5	3

Discussion of Dances 02

The next photo still shows the same dancer model but with different movements, where the movement is by shaking the scarf. The shutter speed setting was made longer (4 seconds) with the aim of increasing the amount of movement. So by setting a longer shutter speed, it allows for more multiple flashes with a setting of 5 (five) flashes, while the flash delay speed is still set at 3 for the reason that if it is too fast then the movement will be too tight and the shutter release will take longer to close and the frame area is not completely filled (lack of movement). The diaphragm aperture is made smaller (F/5.6) to avoid excessive exposure because the recording duration is longer. The results above show that the movement pauses and the photo frame area is filled ideally without any cropping process. This is what the author hopes for, so the calculation between multi flash, Hz and shutter speed must be appropriate to the dancer's movements.



Fig. 8. Dances 03 Taken with Canon EOS 7D, EF 18-135mm Lens (Canon)

Table 3. Dances 03 Photo Exif

<i>Shutter Speed</i>	<i>Aperture</i>	<i>ISO</i>	<i>Focal Length</i>	<i>Multi</i>	<i>Hz</i>
3 second	f/5	200	20mm	4	3

Discussion of Dances 03

This photo shows the movement of the dancer in the middle moving to the left and moving his hands. In this photo shoot, the settings are exactly the same as the first photo shoot where the shutter speed was set at three seconds, slightly faster because the multi was only set to four flashes (recording four movements). Meanwhile, the ISO and focal length are the same at 200 and 20mm. The results of the movement are in accordance with the author's predictions, where it is centered in the middle with variations in movement on the left and right. The only drawback is that the dancer's movements overlap in the middle, reducing the composition and detail.



Fig. 9. Dances 04 Taken with Canon EOS 7D, EF 18-135mm Lens (Canon)

Table 4. Dances 04 Photo Exif

<i>Shutter Speed</i>	<i>Aperture</i>	<i>ISO</i>	<i>Focal Length</i>	<i>Multi</i>	<i>Hz</i>
4 second	f/5,6	200	20mm	7	3







Discussion of Dances 04

Next, the same dance still shows the composition of the rule of thirds, where the dancer is on the left side of the frame in a stationary position but the body and hands move up and down, so that the final photo shows the dancer moving in a circle. Setting the shutter speed for 4 seconds to show longer movements because with multi flash it is set at 7 (seven) to show as many as seven movements. Next, the Hz is set at 3 (three) with the intention that the

movement pause is not too tight. However, if you look at it because the dancer's position is still in place, you can see that there is a buildup of movement compared to if the model moves dynamically.

Based on the experiments and shooting results that have been carried out, the author concludes several technical data results that can be used as a benchmark in stroboscopic shooting by ignoring the Shutter Speed, Aperture and ISO settings, with examples of simulation settings as follows:

Table 5. Simulation of Shooting Results

No	Movement Speed	Multi	Hz	Result	Image Result
1	1"/meter	3	1	3 movements, tenuous freezing	
2.	1"/meter	3	3	3 movements, freeze slightly tightly	
3.	1"/meter	3	5	3 movements, very tight freezing	
4	0,5"/meter	3	1	3 movements, the freeze is quite far apart	
5	0,5"/meter	3	3	3 movements, tight freeze	
6	0,5"/meter	3	5	3 movements, very tight freezing	

It can be concluded that delays in the speed of the light flash (Hz) and the movement of the model can influence the results of motion freezing, such as being sparse to dense. The higher the Hz value, the flash will fire faster (1Hz = 1/1 second) compared to 3 Hz (1/3

second). Looking at the results of the research that the author has carried out, in the future commercial photos, especially model photos, performance photos and even commercial product photos, could use alternative lighting as an answer to presenting photos that are more creative and interesting. This research is also very open to being developed with other shooting methods and techniques such as:

- (a) Outdoor shooting
- (b) Use studio lights with a large watt capacity
- (c) Add motion blur to the motion sequence
- (d) Increase in the number and position of Speedlites
- (e) Mix light by combining several lighting sources

Apart from the use of photo editing tools that can be used so that the results look similar to combining several photos into one. However, this will be different and of high value if a photographer has the idealism of producing aesthetic photos that are purely the result of camera recordings, not computer engineering.

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