360 CAMERA
SECRET EXPOSURE SYSTEM

Auto M

ISO

WB

1/120 100 5500K

Auto 100 125

Never record blurry or noisy 360 video ever again

Best360

INTRODUCTION

This guide will show you a proven step by step system to never record blurry or noisy 360 video ever again.

This system will work for day time and night time 360 video.

To do this, you will stop using auto exposure mode and use manual exposure mode instead.

In auto exposure mode the camera is picking the ISO and Shutter Speed for you.

Unfortunately the camera is picking the wrong settings and causing the blur and noise in your video.

By using manual exposure mode you can pick the ISO and Shutter Speed yourself instead of the camera.

But how do you know which ISO and Shutter Speed to choose? The solution is the Best360 Manual Exposure Flowchart.

The flowchart will show you the correct ISO and Shutter speed to choose depending on the type of activity you are doing.

It's really easy to follow. The results are totally worth it. So let me show you how it works.

VIDEO RESOLUTION

Video resolution refers to the dimensions of a video in terms of width and height, usually measured in pixels.

Resolution determines the amount of detail a video can display.

Higher resolutions have more pixels and can show more detail, while lower resolutions have fewer pixels and less detail.

Common Resolutions:
1080p (Full HD): 1920x1080 pixels
4K (Ultra HD): 3840x2160 pixels
5.7K: 5760 x 2880 pixels
8K: 7680x4320 pixels

Always use the highest resolution available for the highest quality video possible.

FRAME RATE

Frame rate (or frames per second, fps) refers to the number of individual frames or photos that are displayed per second in a video.

The frame rate affects the smoothness of motion in the video.

A higher frame rate means smoother motion, while a lower frame rate can make the video appear choppy.

Common Frame Rates:
24fps: The standard for film and cinematic look.
30fps: Common for TV broadcasts and online video.
60fps: Used for fast-paced content like sports, gaming, or action scenes, offering very smooth motion.
120 FPS and higher: Used for slow-motion video, allowing footage to be slowed down while still maintaining smooth playback.

Always film in 30fps for social media. It is ok to film in 60fps or 120fps and slow down the video to 30fps.

EXPOSURE

Exposure is how bright or dark the video is.

Underexposure occurs when not enough light hits the camera's sensor, resulting in a darker video than intended.

The video appears too dark, with details in the shadows being lost. Underexposed videos may lack vibrancy, and important detail might be difficult to see.

Perfect exposure occurs when the correct amount of light hits the camera's sensor, resulting in a video that is neither too dark nor too bright.

The video appears well-balanced, with details visible in both the highlights (bright areas) and shadows (dark areas). Colors are accurately represented, and the video looks natural.

Overexposure occurs when too much light hits the camera's sensor, resulting in a brighter video than intended.

The video appears too bright, with details in the highlights being washed out or completely lost. Overexposed videos can look flat, with bright areas losing texture and color.

ISO

ISO is a measure of a camera sensor's sensitivity to light. This setting is responsible for making your videos noisy or grainy!

Low ISO (e.g., 100 or 200): The sensor is less sensitive to light, which is ideal for bright environments like sunny outdoor settings. Low ISO settings produce clearer videos with less noise or grain.

High ISO (e.g., 800, 1600, or higher): The sensor is more sensitive to light, useful in low-light conditions, such as indoors or at night. However, increasing ISO can introduce more noise, resulting in a grainier video.

Bright light: Use a low ISO to maintain video quality.

Low light: Use a higher ISO to brighten the video, though it will increase noise.

SHUTTER SPEED

Shutter speed refers to the amount of time the camera's shutter remains open to allow light to hit the sensor. It's usually measured in fractions of a second (e.g., 1/60, 1/250) or in seconds for longer exposures. This setting is responsible for making your videos blurry!

Slow Shutter Speed (e.g., 1/30, 1 second, or longer): The shutter stays open longer, allowing more light to enter. This can create motion blur if the subject is moving, or it can capture more light in low-light conditions.

Slow shutter speeds are useful for creating artistic effects, like blurring the movement of water or light trails, but they require a steady hand or a tripod to avoid camera shake or micro jitters.

Fast Shutter Speed (e.g., 1/1000, 1/2000): The shutter opens and closes quickly, freezing motion. This is useful for capturing fast-moving subjects like sports or wildlife.

A faster shutter speed will result in a darker video because less light is captured.

MOTION TYPES

Depending on the activity you are doing, if the shutter speed is set too low, then you will get blurry video and micro jitters.

Use the guide below to choose the correct minimum shutter speed. This will guarantee ZERO chance of blurry video and micro jitters.

There are 3 types of motion. Categorise your activitity based on the below and choose the appropiate minimum shutter speed setting.

No motion: Camera still on a tripod, or standing completely still and moving the camera very slowly.

Minimum shutter speed = 2 x frames per second.

Moderate motion: Walking with the camera, casual city bike ride, or car driving on smooth road.

Minimum shutter speed = 4 x frames per second.

Extreme motion: Mountain biking, driving off-road, rollercoaster ride, surfing, or bungee jumping.

Minimum shutter speed = 8 x frames per second.

WHITE BALANCE

White balance is a camera setting that adjusts the color balance of a video to ensure that whites appear white, without any color cast.

It compensates for the color temperature of the light in the scene, which can range from warm (yellow/orange) to cool (blue).

Manually adjust the white balance in your camera settings by selecting a specific color temperature (measured in Kelvin, K).

Correct White Balance: Ensures that whites are neutral, and all other colors in the image appear as they do in real life.

White balance recommended settings:
Bright sunny weather: 5500K
Cloudy weather: 6500K
Indoors: 2800K-4000K

Auto White Balance (AWB): Allows the camera to apply the appropriate white balance correction.

This setting is not recommended because the colour temperature will keep shifting in your video from cool to warm and vice versa. It does not look professional.

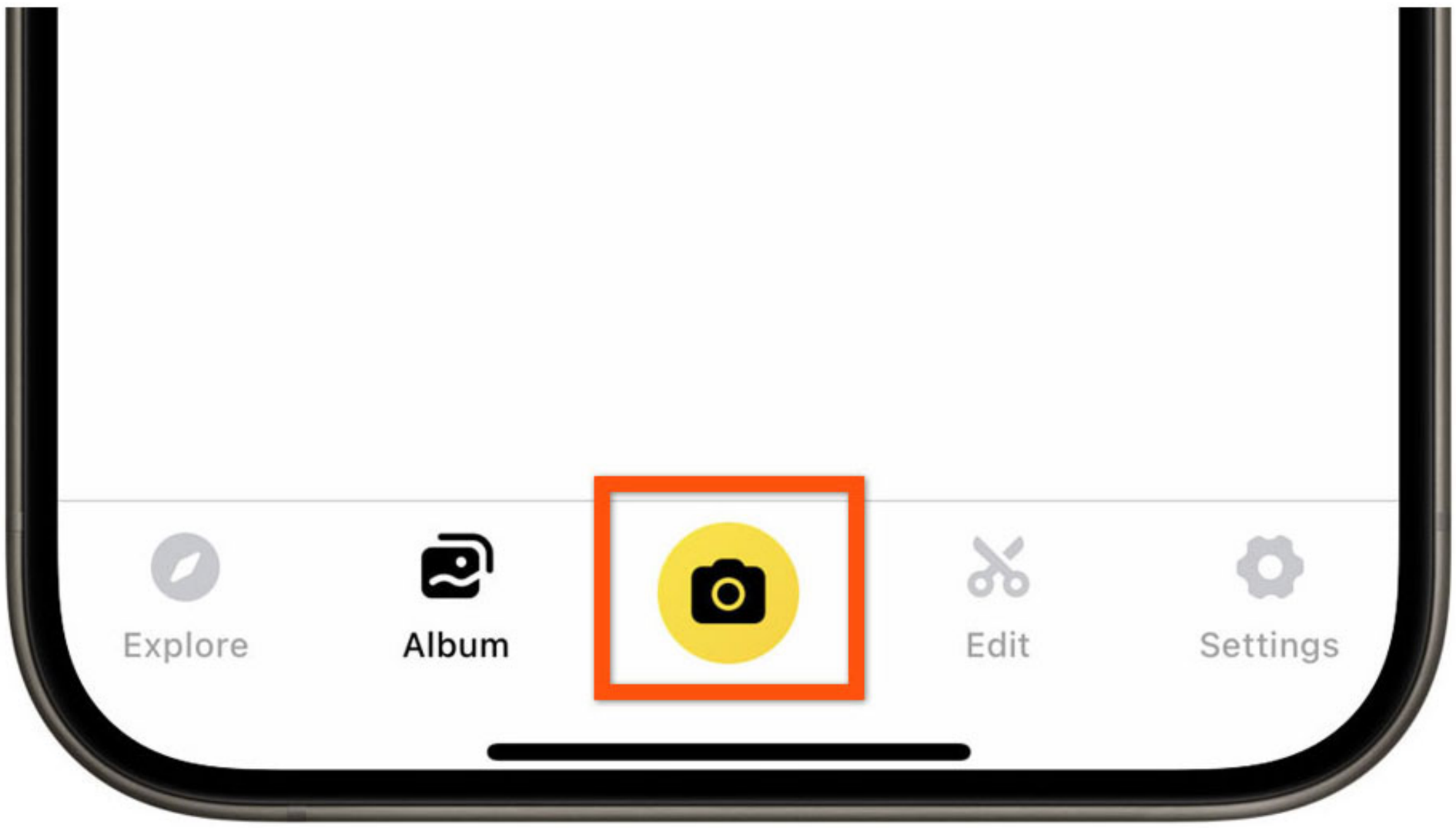
IN-CAMERA METHOD

To access manual exposure mode settings within the camera, swipe left from the right of the screen.

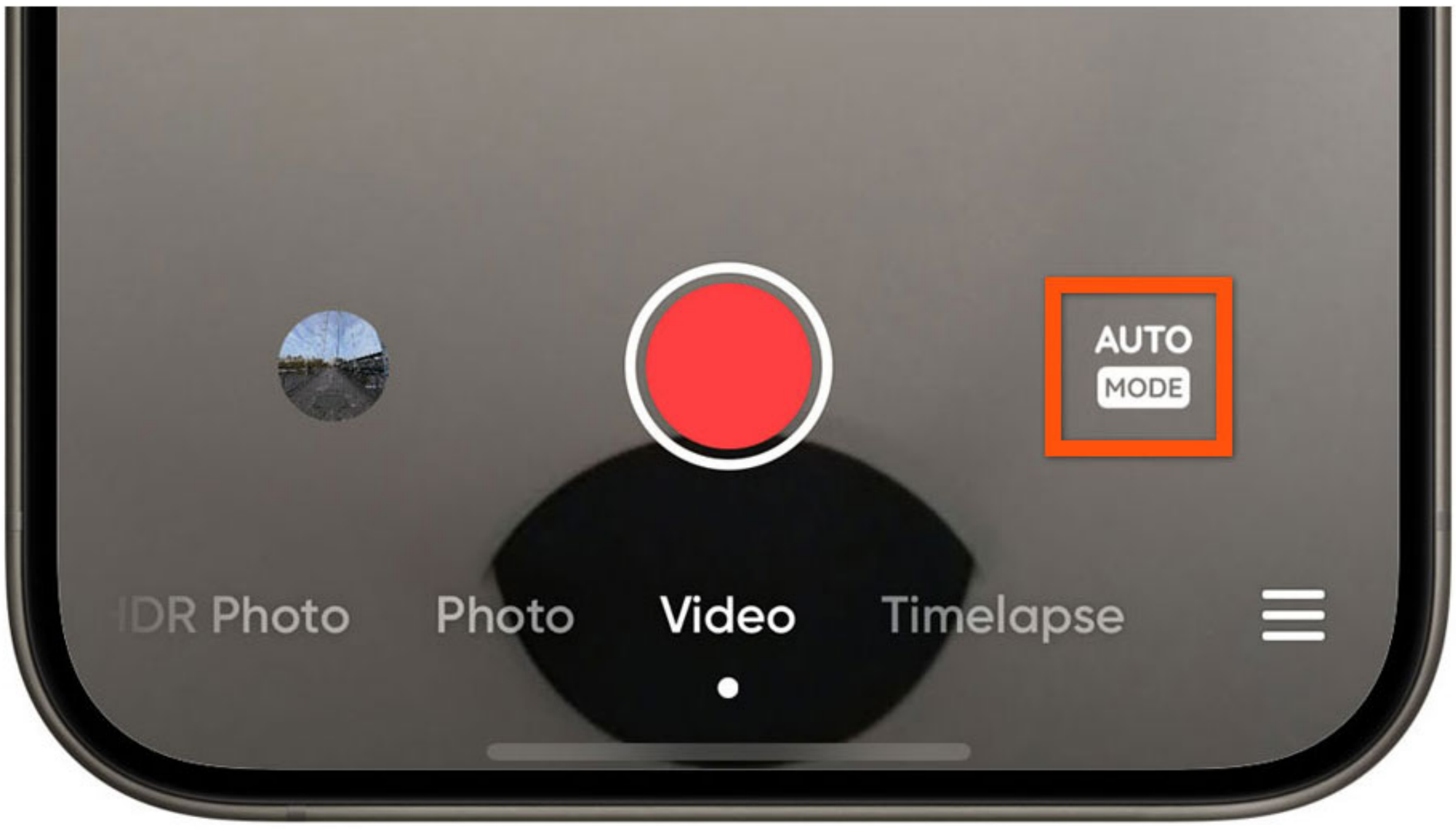
Tap “M” for Manual exposure mode. Now you can manually control the ISO and Shutter Speed.

INSTA360 APP METHOD

To access manual exposure mode settings in the Insta360 app, tap the yellow remote control button.



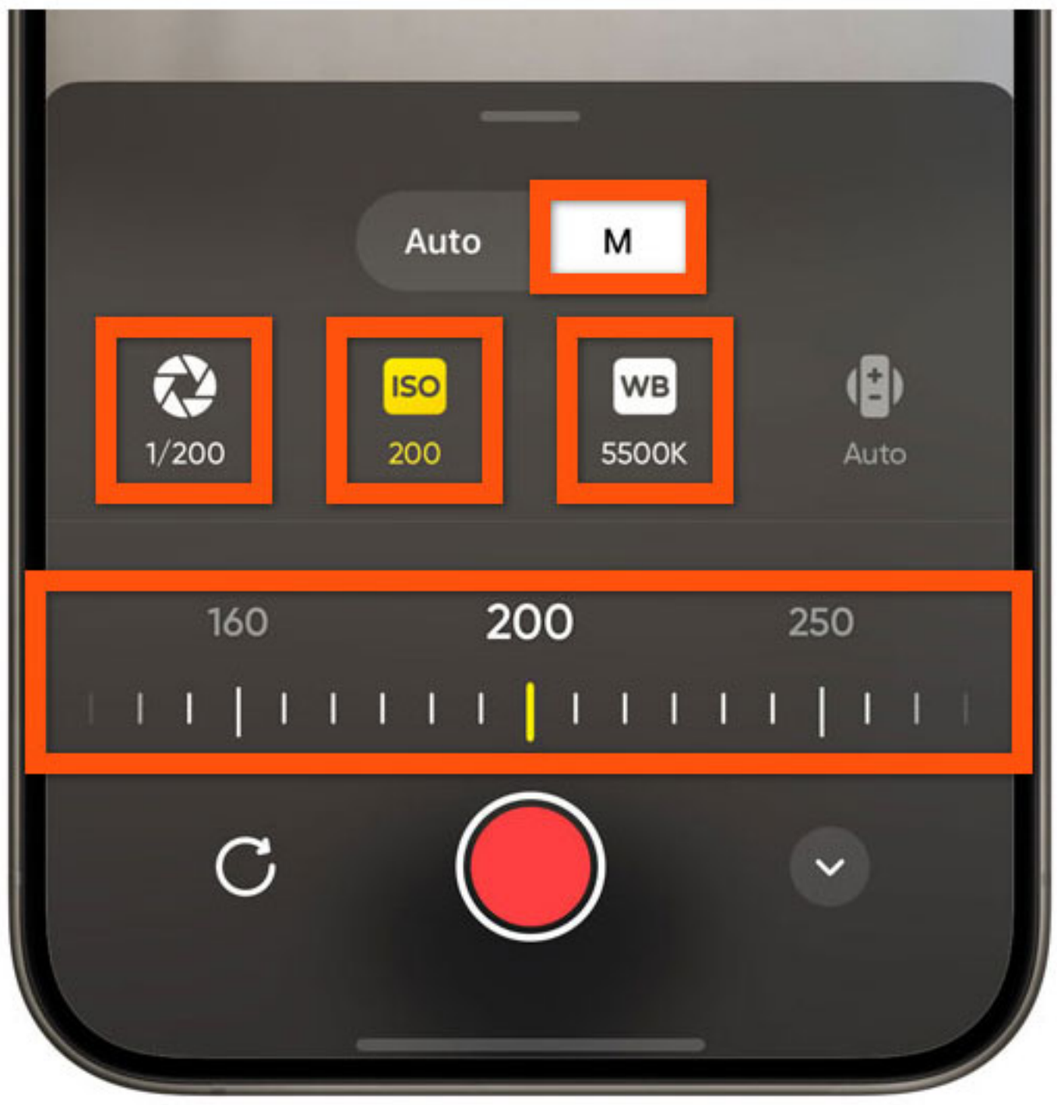
Tap the exposure button, either “Auto mode” or “M”.



INSTA360 APP METHOD

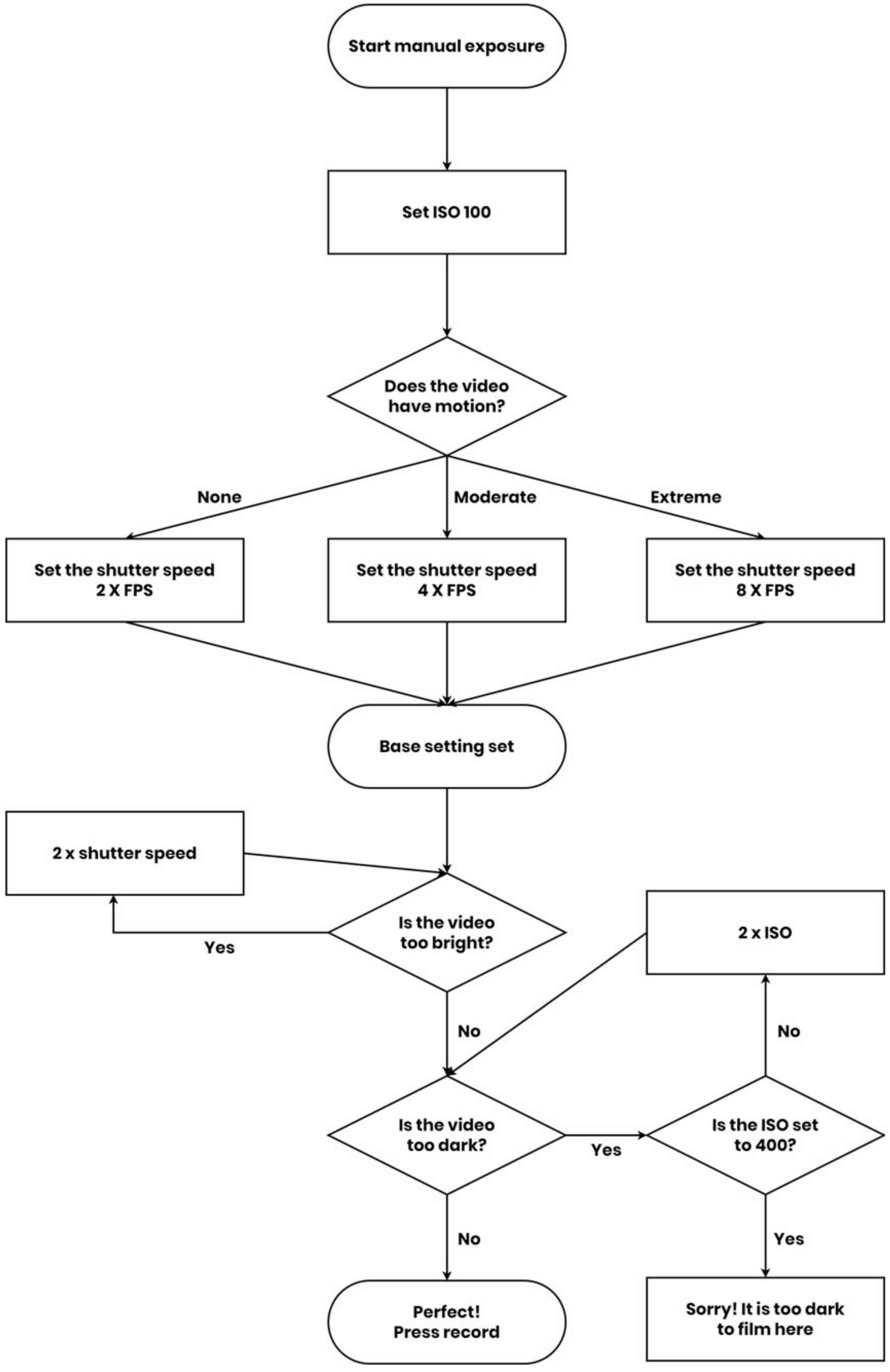
Tap “M” for manual exposure mode settings. Now you can control the ISO, Shutter Speed, and White Balance.

Use the slider to pick the correct setting.



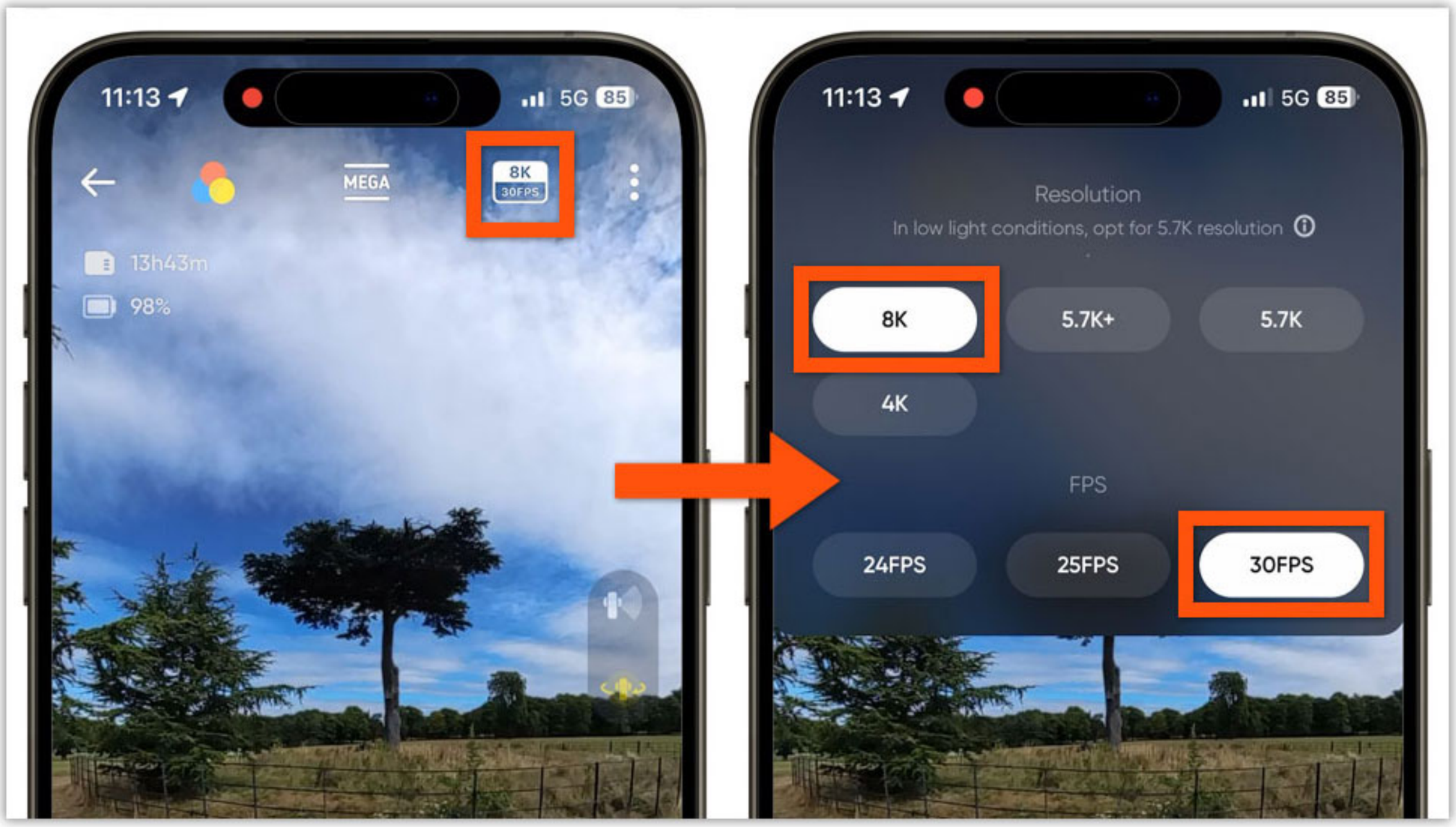
MANUAL FLOW CHART

This flowchart will help you never record blurry or noisy 360 video ever again. Let's go through some examples.



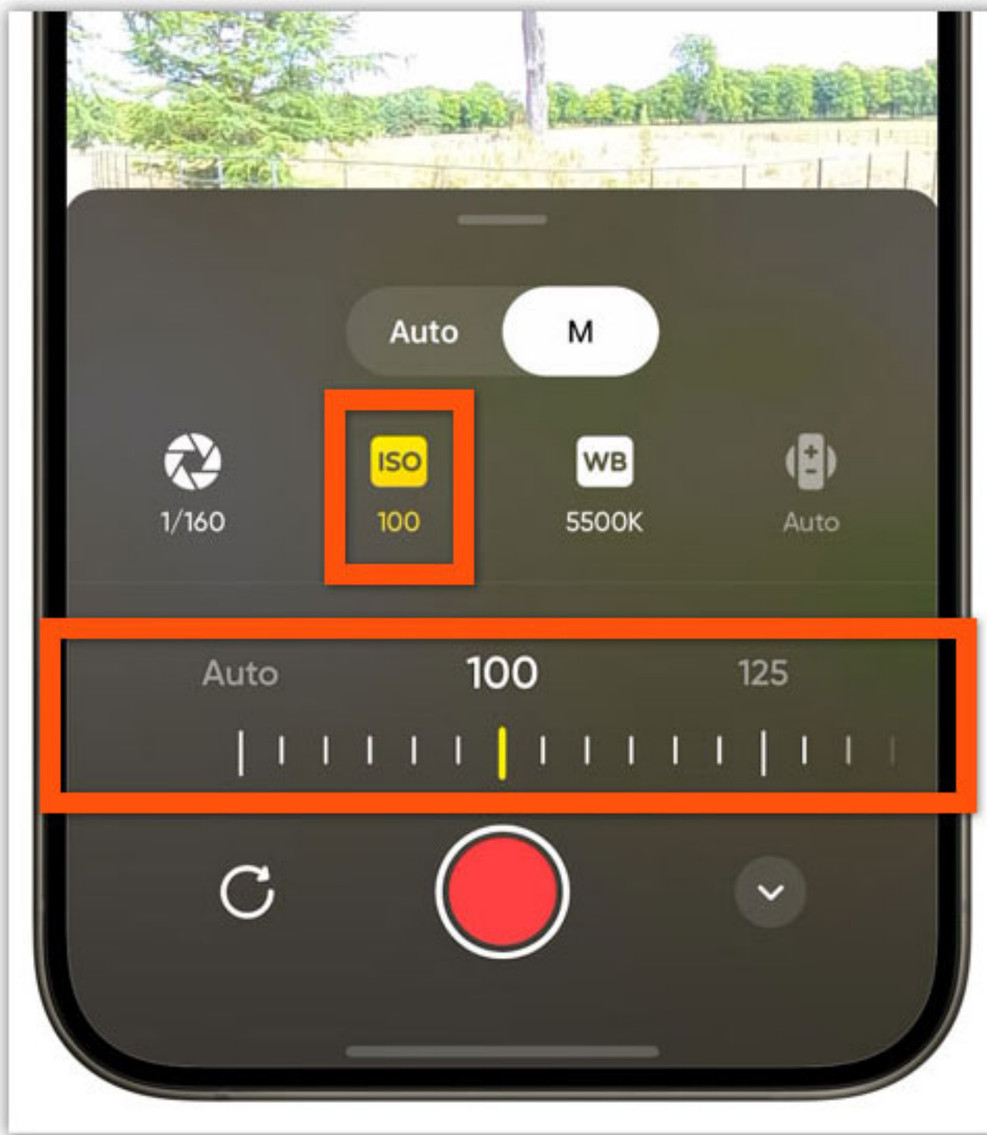
PRE CHECK SETTINGS

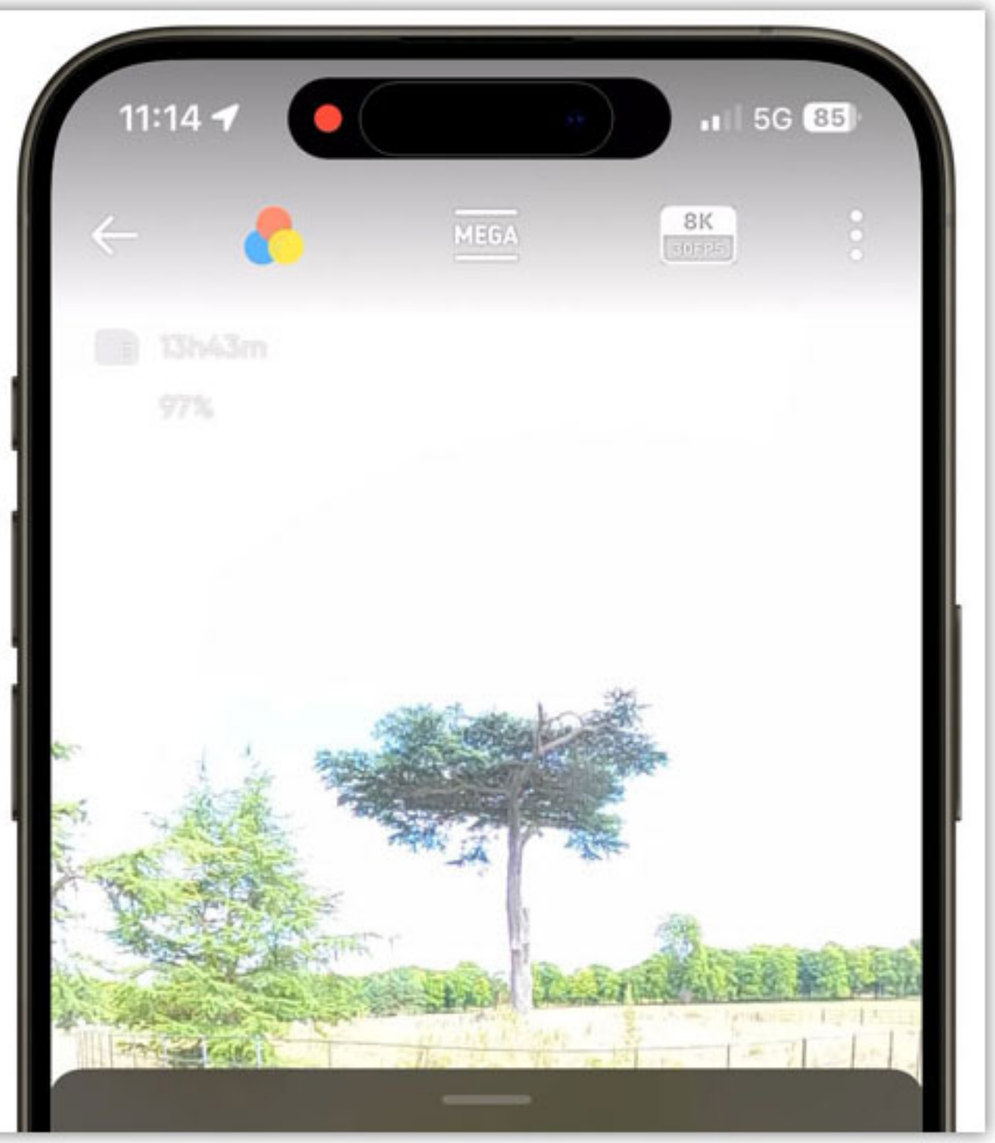
Make sure the highest video resolution and 30fps is selected. This is the best setting for social media.



EX. BRIGHT DAY WALK

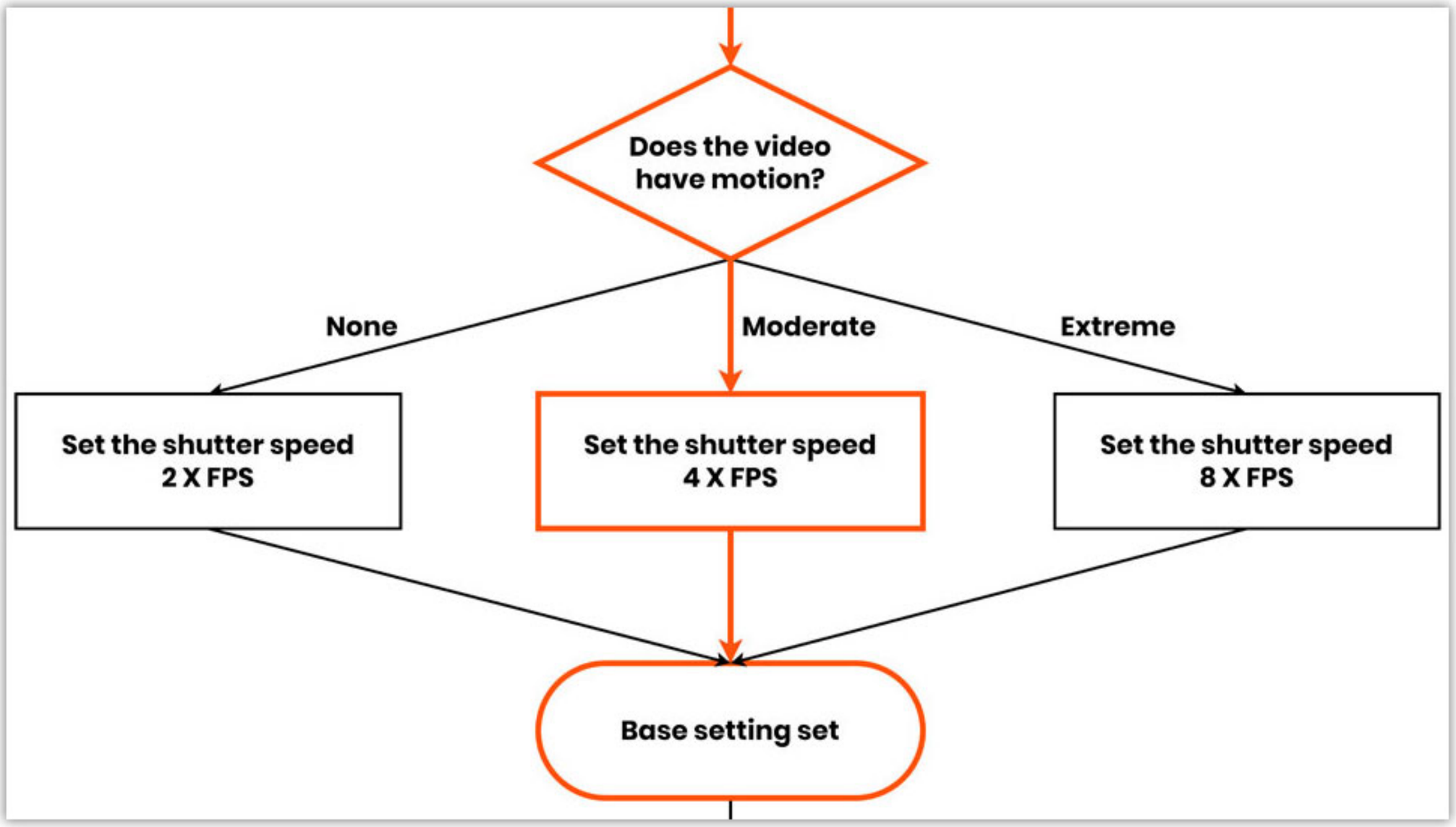
Let's say in this example, you want to walk with your 360 camera on a bright sunny day. Set the ISO to 100.

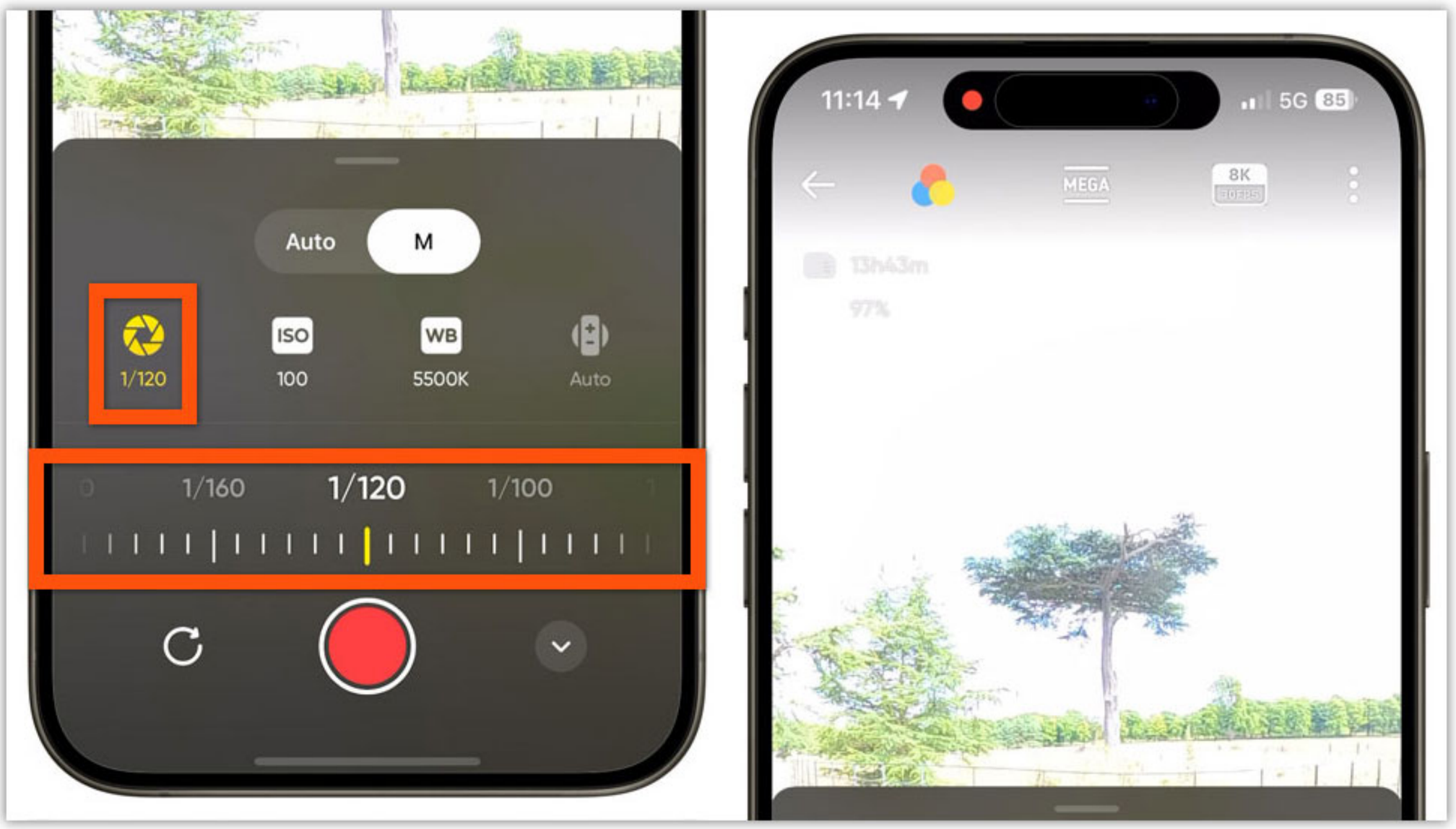




EX. BRIGHT DAY WALK

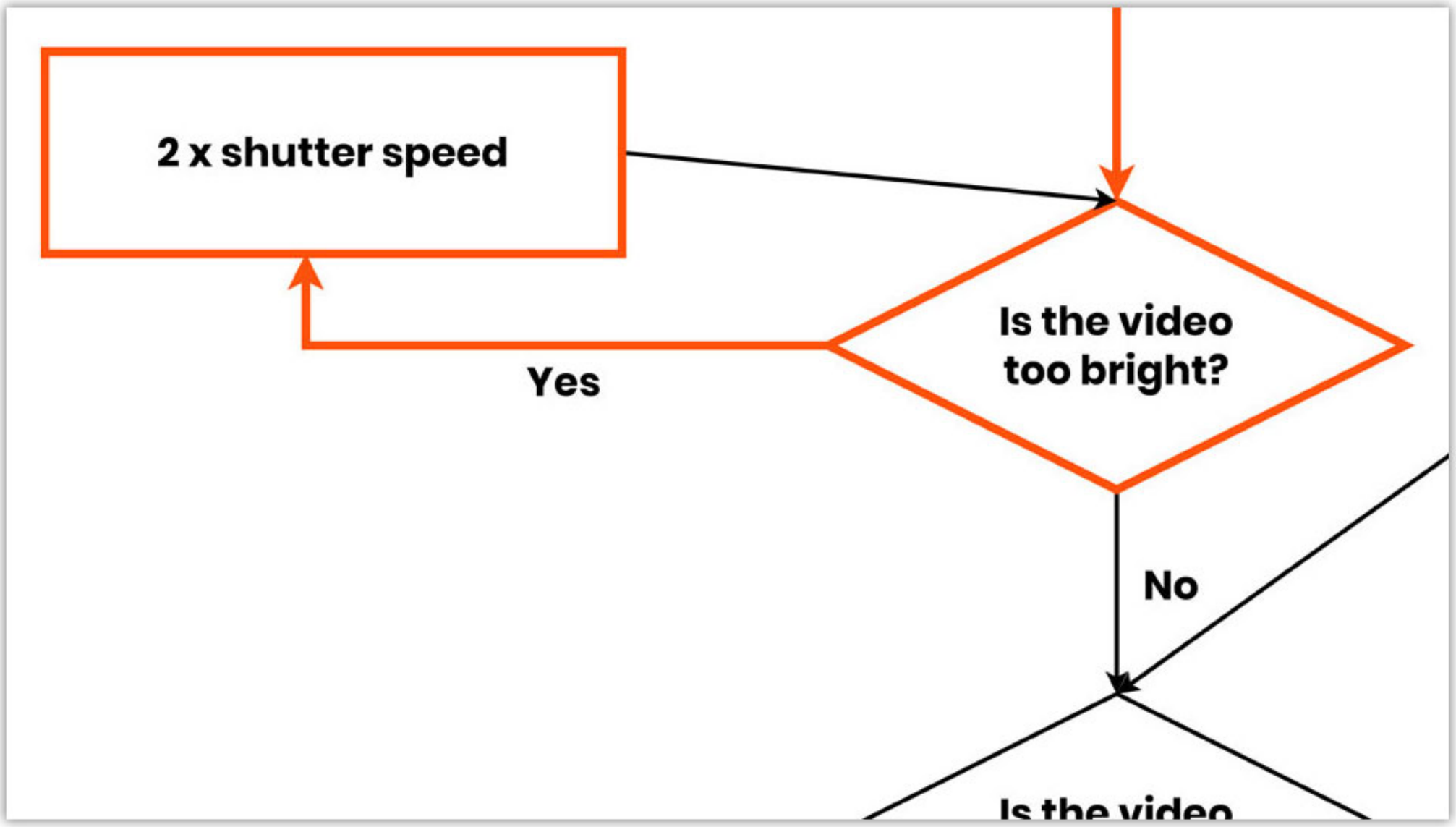
Does the video have motion? Yes, walking is moderate motion. 4 x 30fps equals 120. Set the shutter speed to 1/120. The base setting is set.

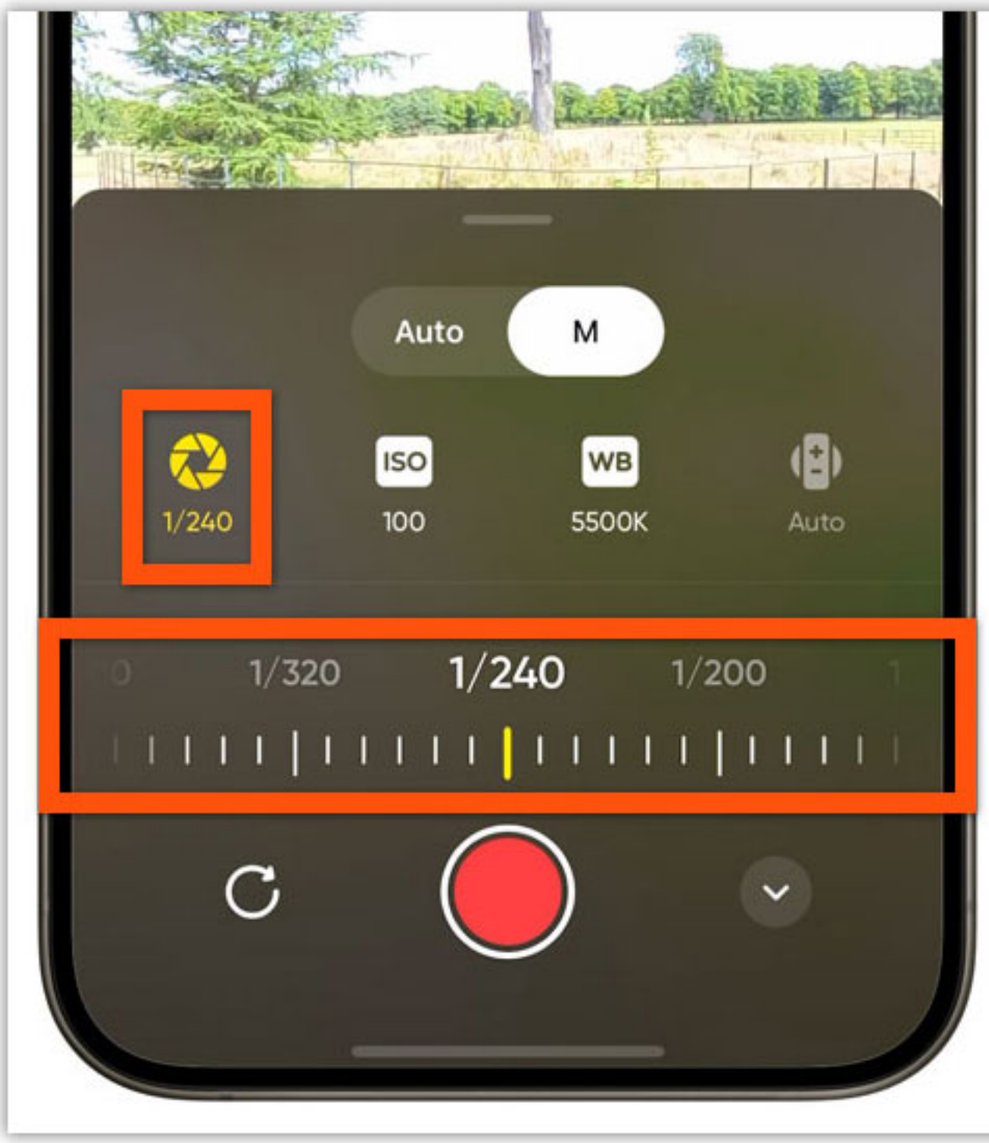


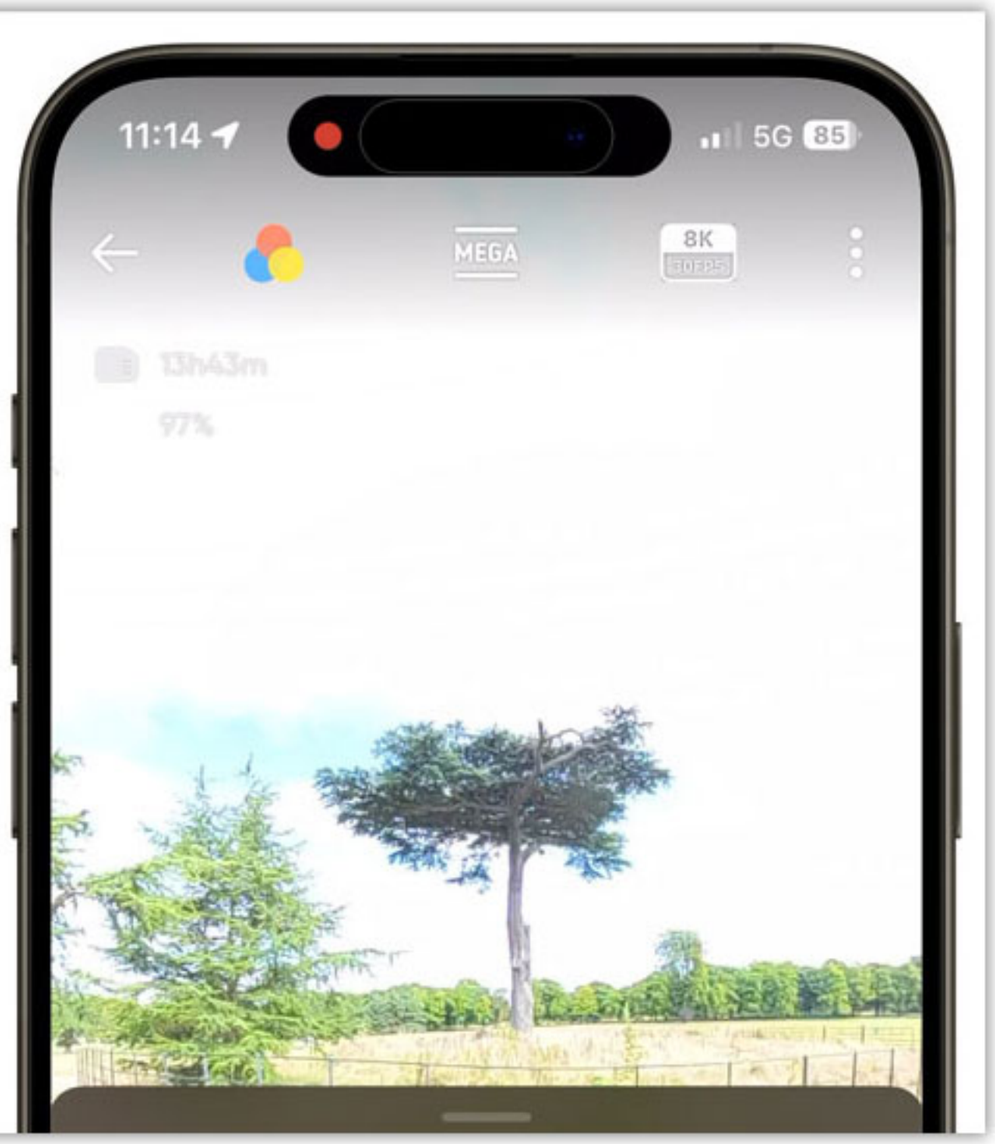


EX. BRIGHT DAY WALK

Is the video too bright? Yes, the sky is overexposed. 2 x current 1/120 shutter speed equals 1/240 shutter speed. Set the shutter speed to 1/240,

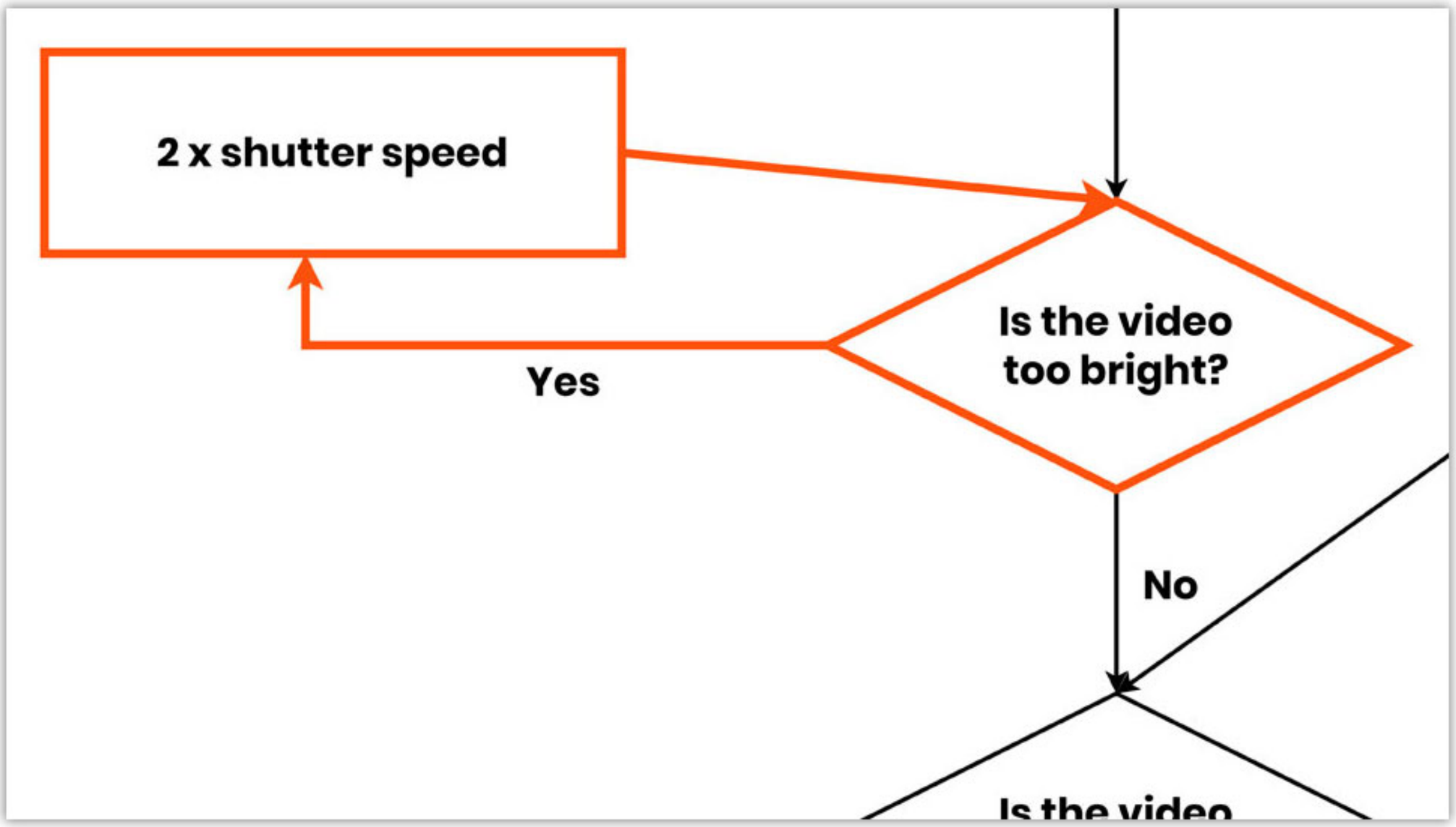


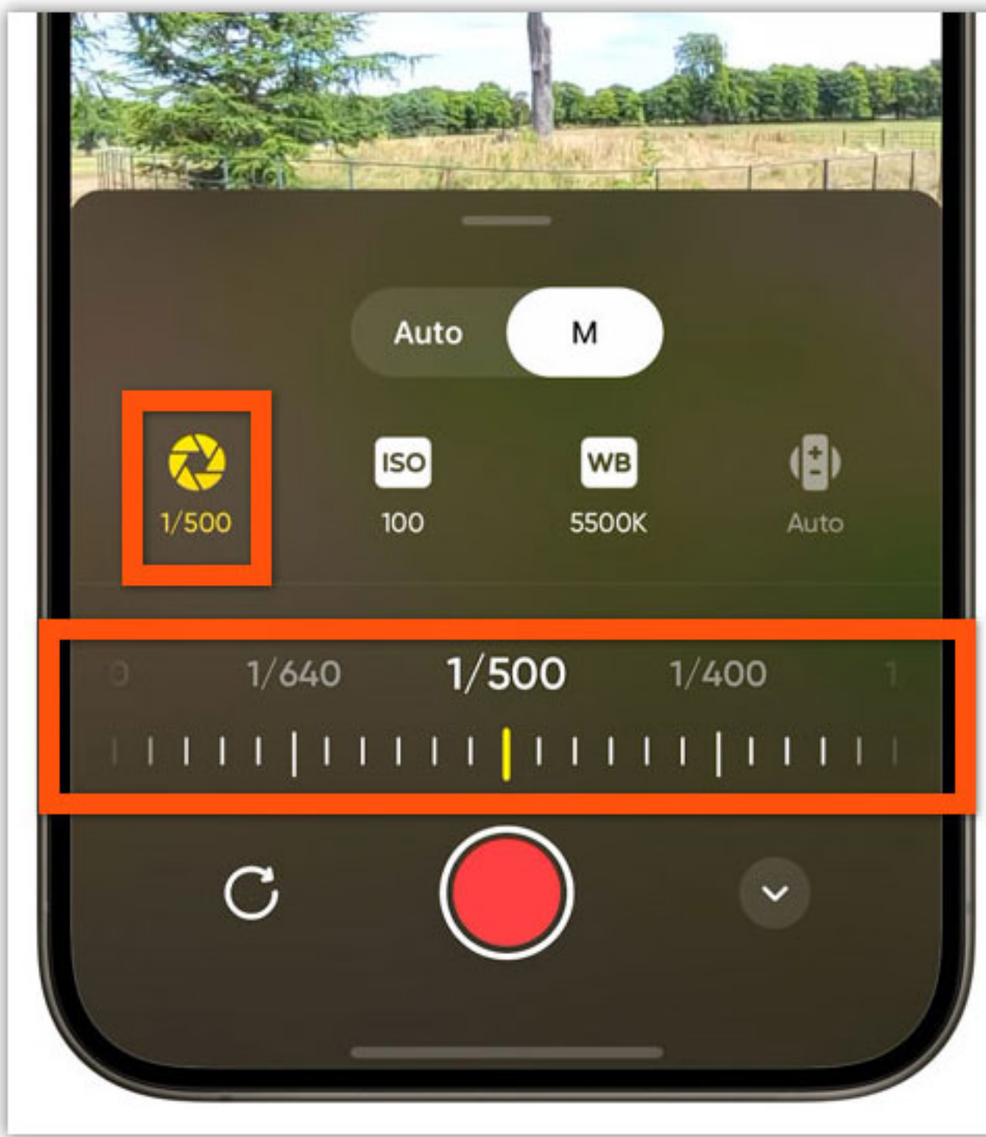




EX. BRIGHT DAY WALK

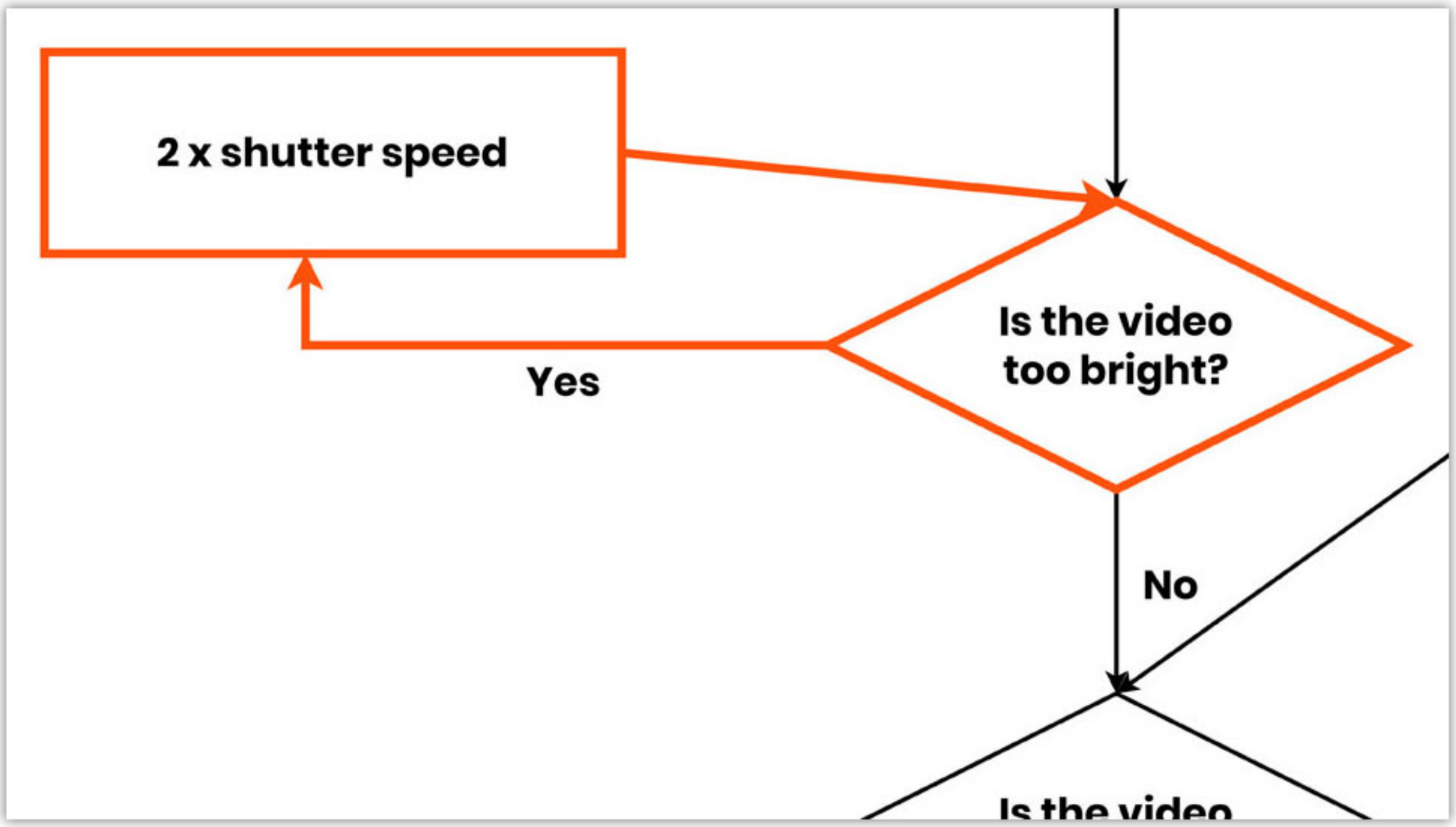
Is the video too bright? Yes, the sky is overexposed. 2 x current 1/240 shutter speed equals 1/480 shutter speed. Set the shutter speed to 1/500 (closest option).

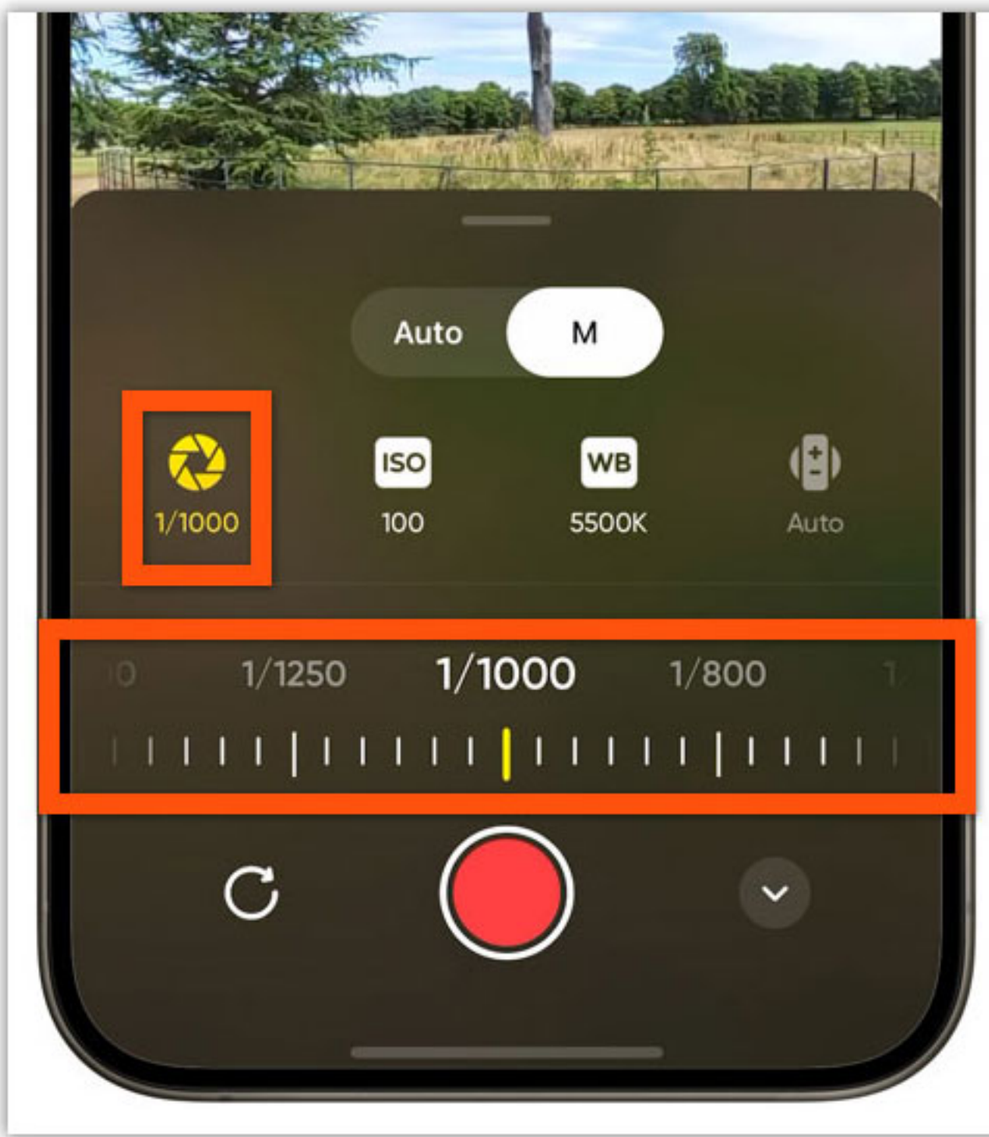




EX. BRIGHT DAY WALK

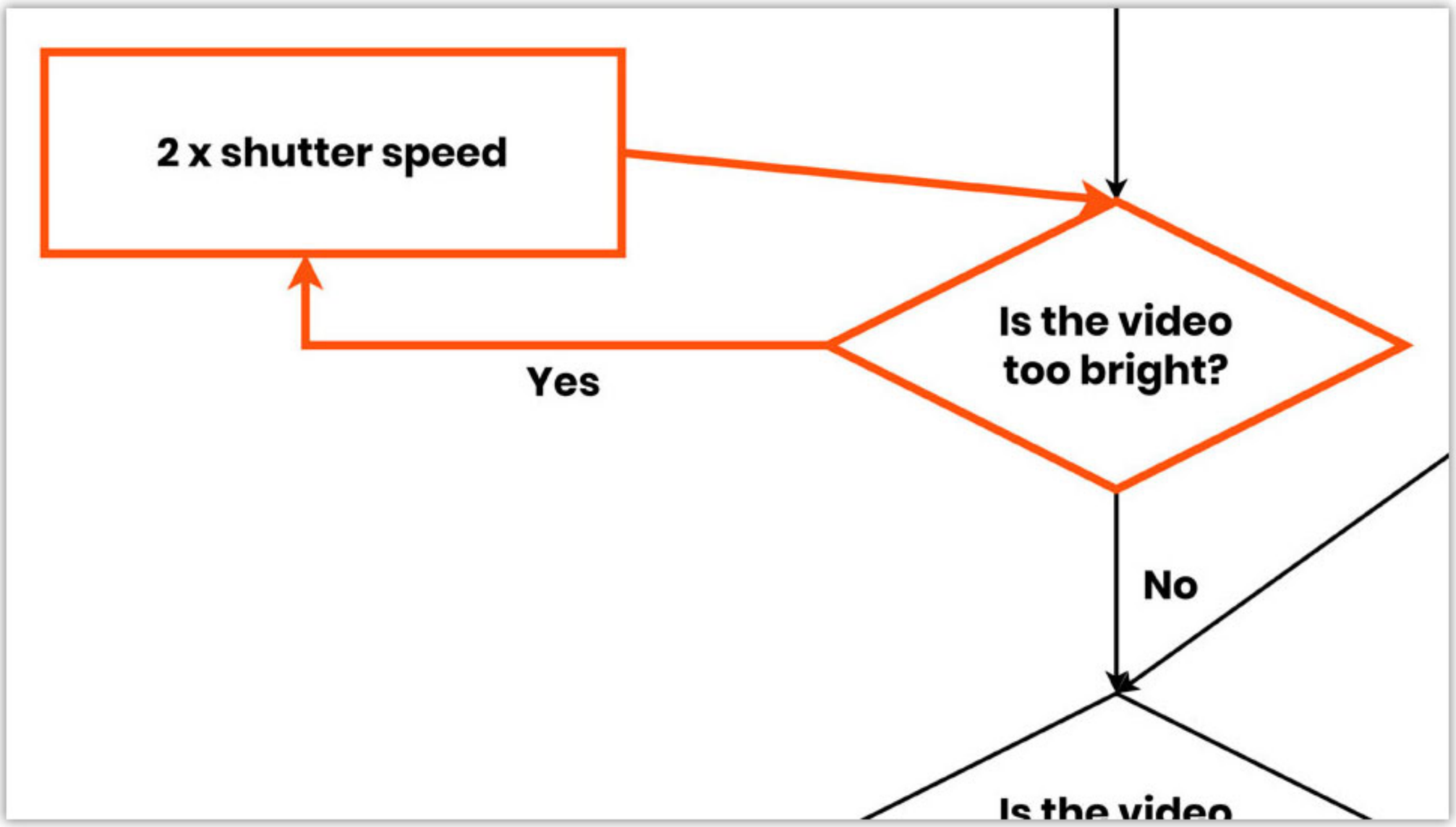
Is the video too bright? Yes, the sky is overexposed. 2 x current 1/500 shutter speed equals 1/1000 shutter speed. Set the shutter speed to 1/1000.

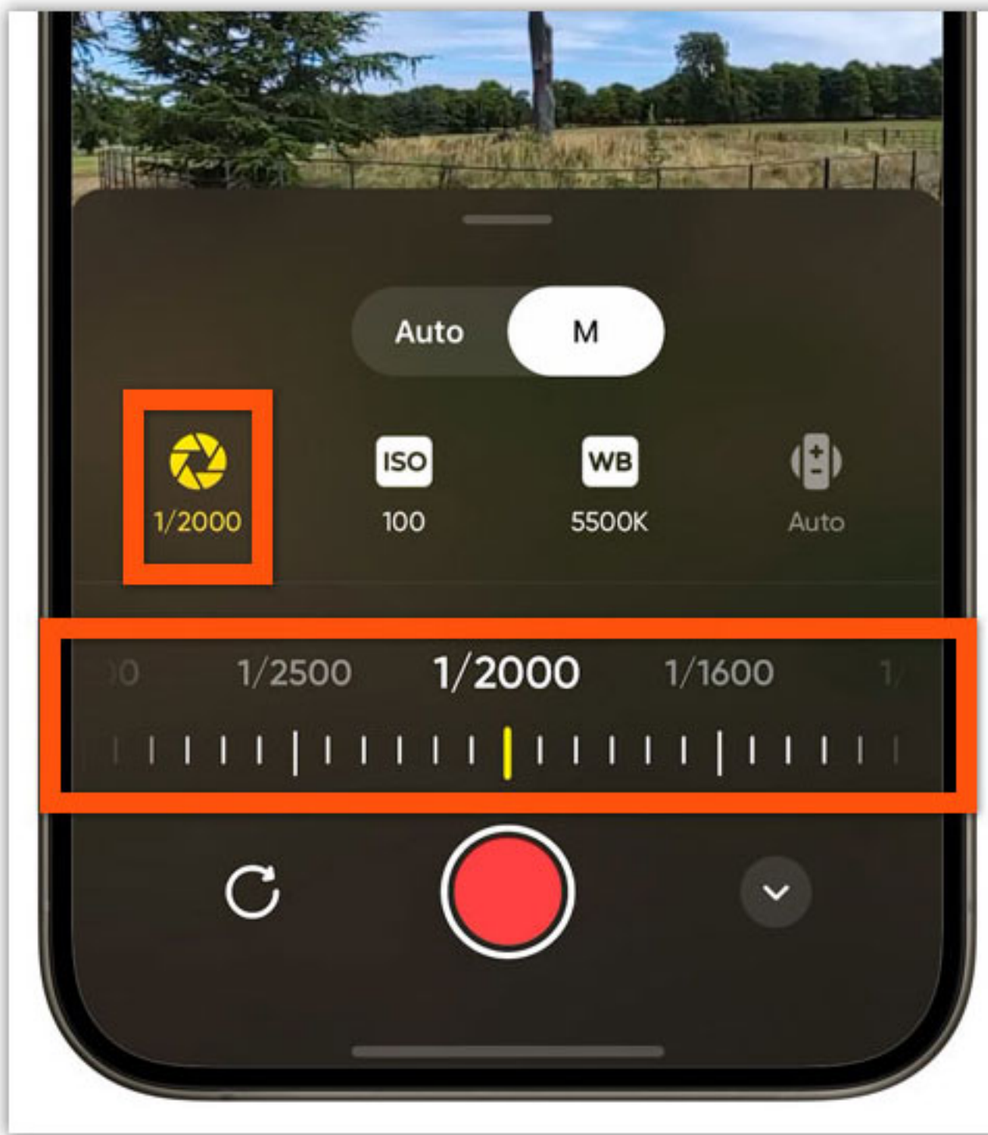




EX. BRIGHT DAY WALK

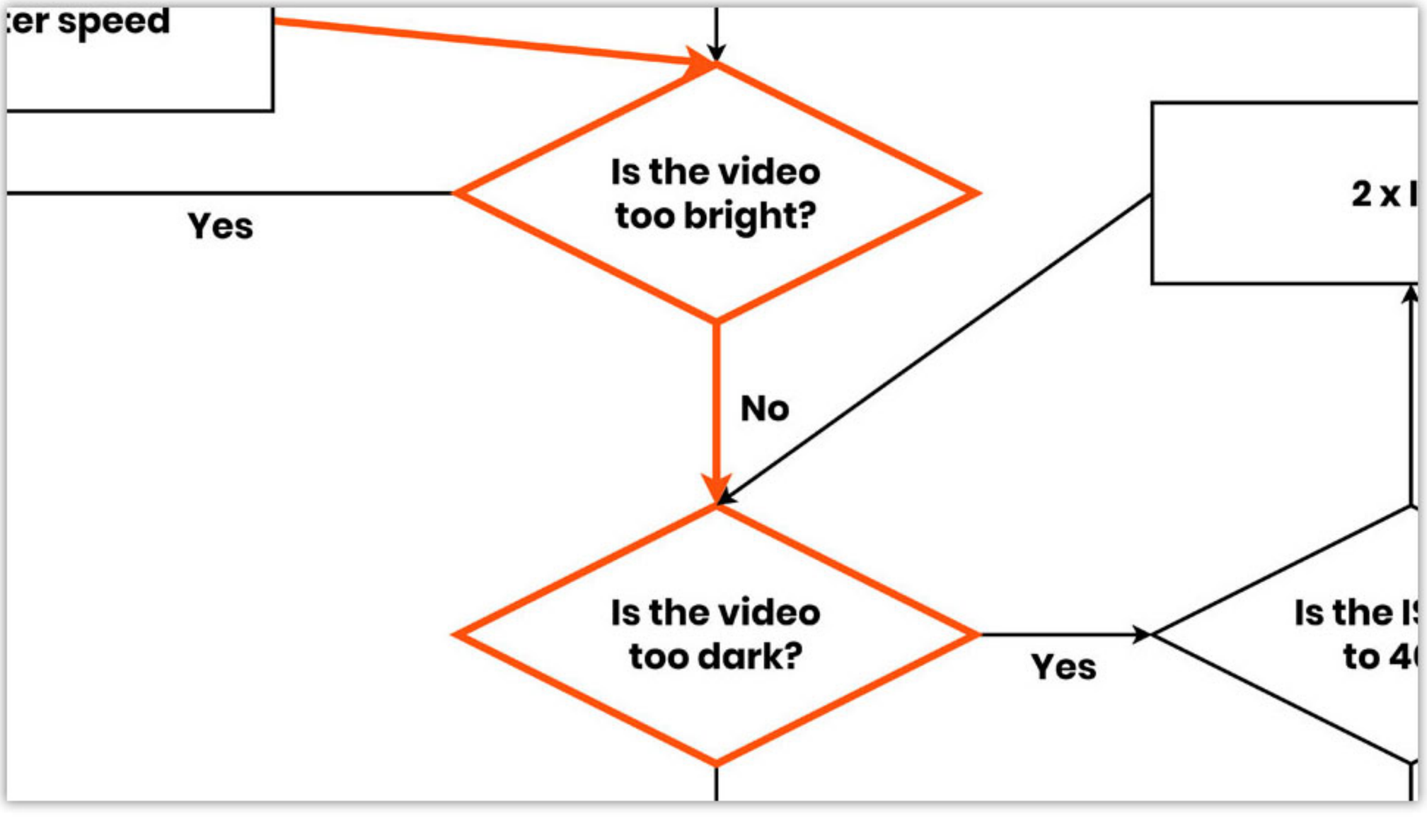
Is the video too bright? Yes, the sky is overexposed. 2 x current 1/1000 shutter speed equals 1/2000 shutter speed. Set the shutter speed to 1/2000.





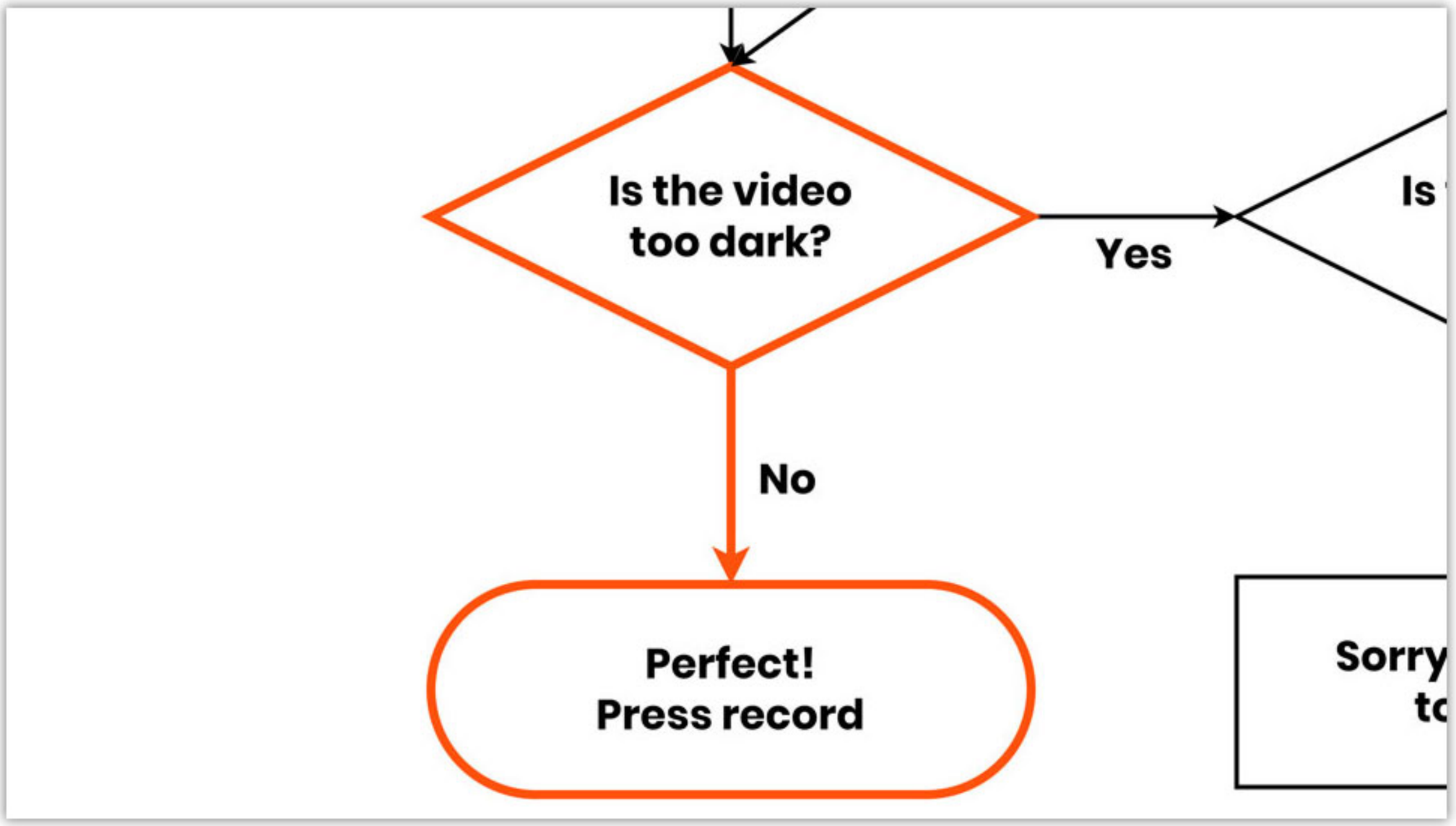
EX. BRIGHT DAY WALK

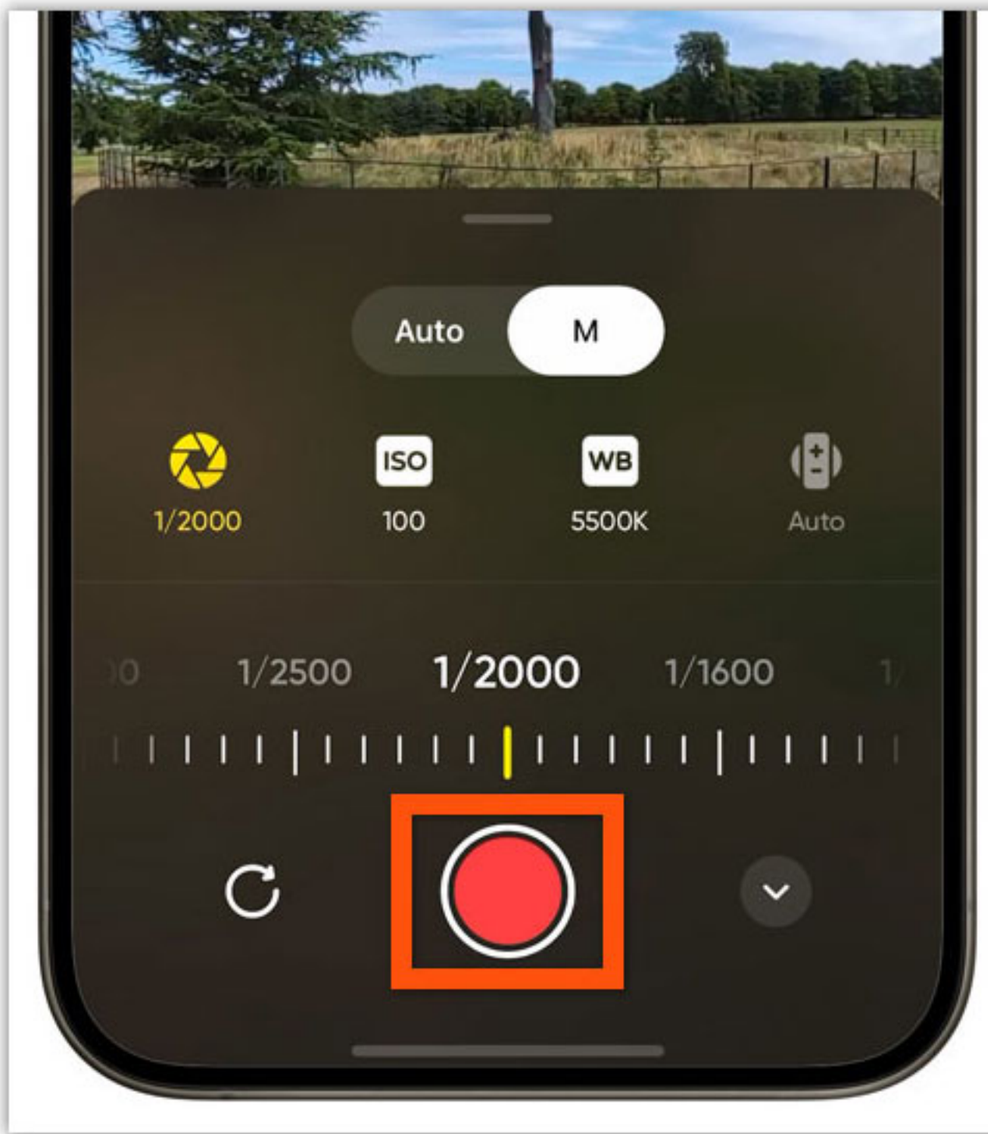
Is the video too bright? No, exposure is looking good.



EX. BRIGHT DAY WALK

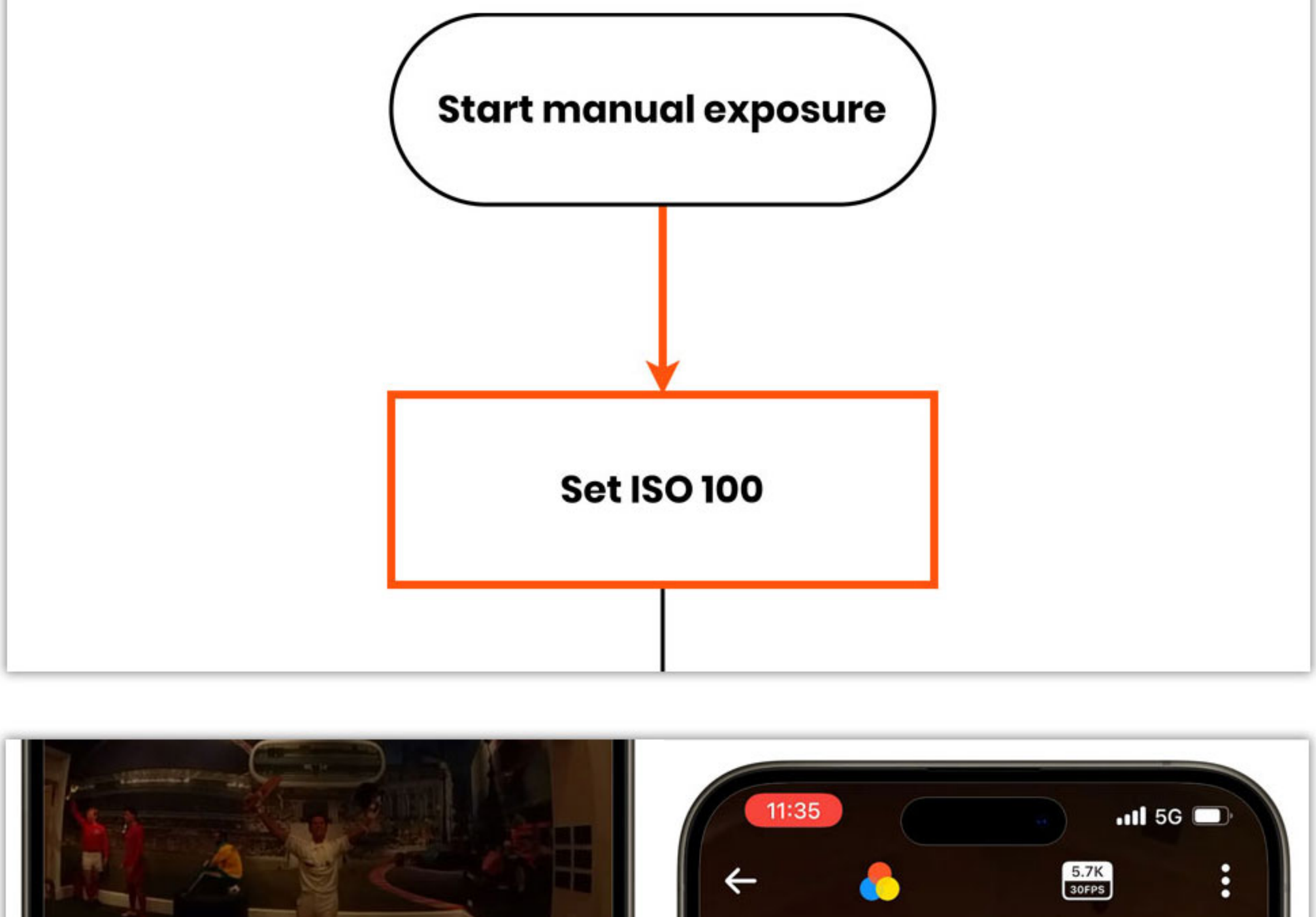
Is the video too dark? No, exposure is looking good. Press record and enjoy high quality video without noise or blur!

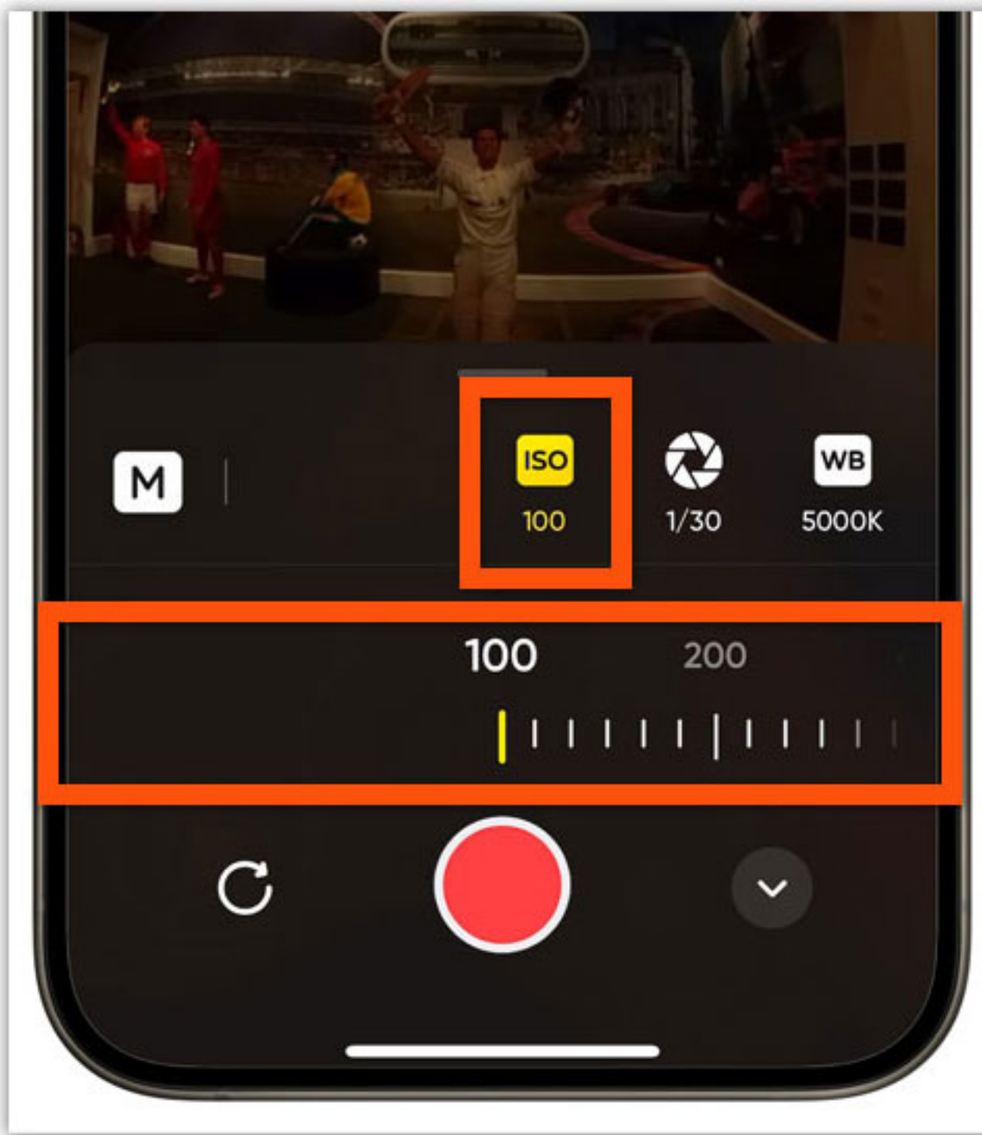




EX. LOWLIGHT WALK

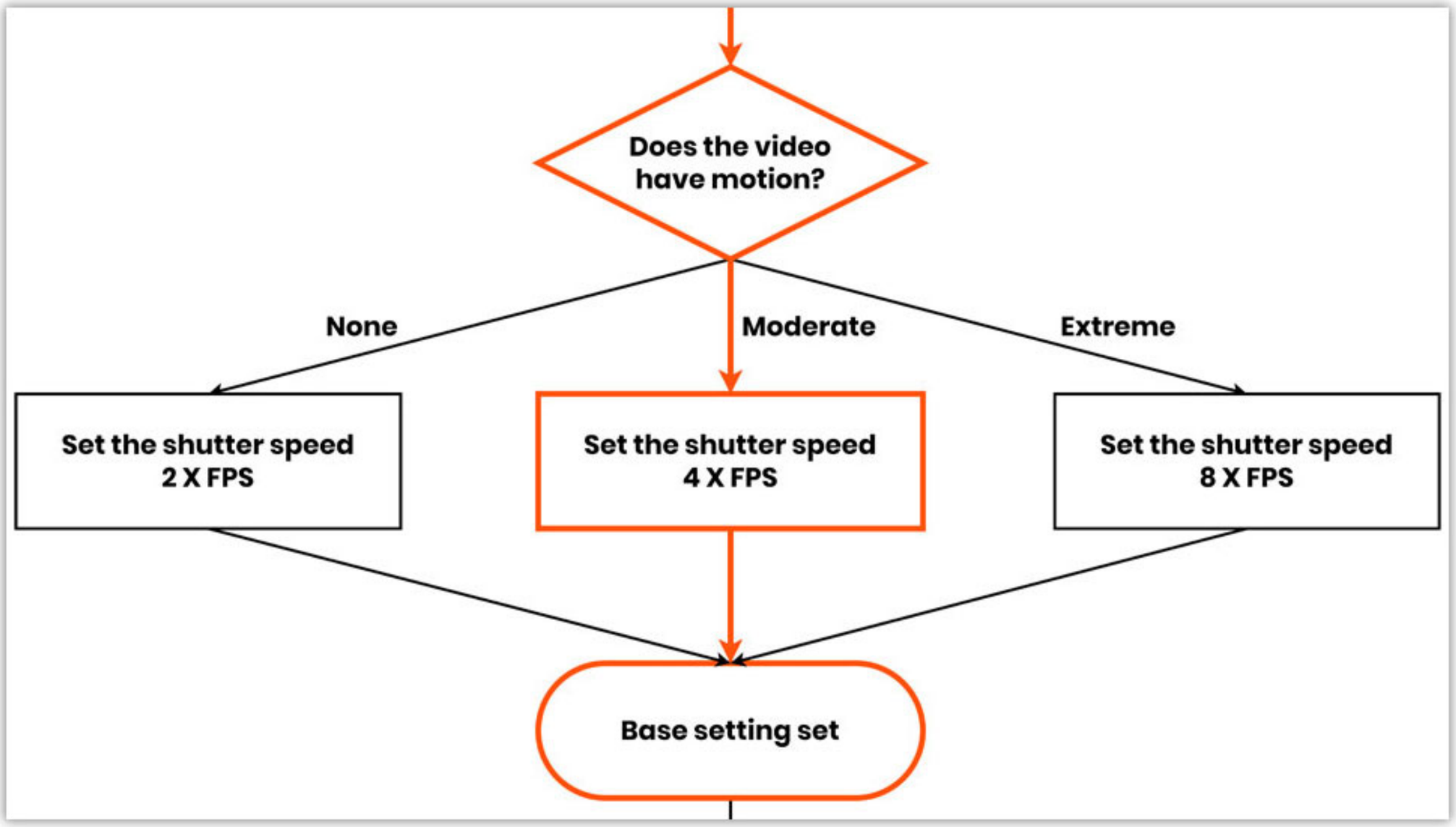
Let's say in this example, you want to walk with your 360 camera indoors. Set the ISO to 100.

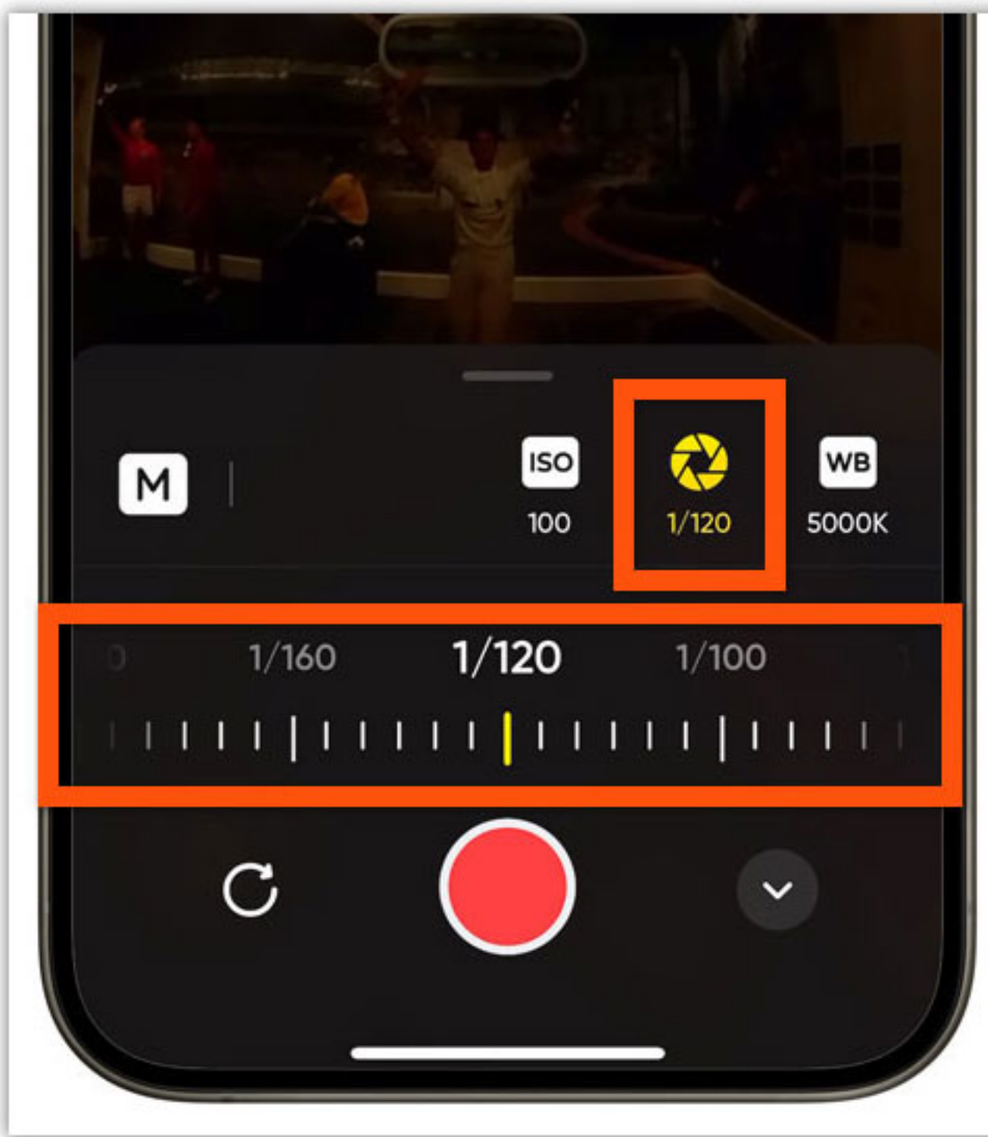


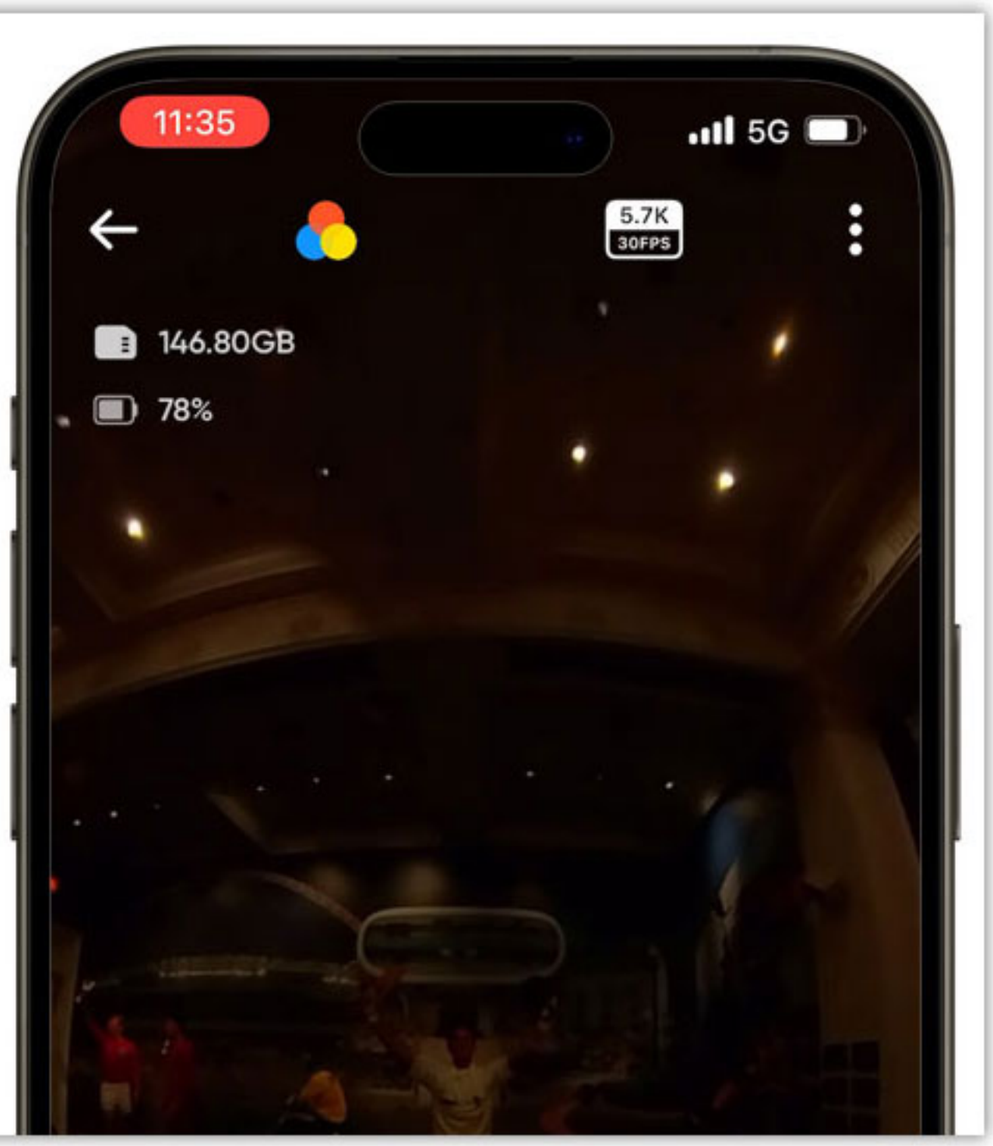


EX. LOWLIGHT WALK

Does the video have motion? Yes, walking is moderate motion. 4 x 30fps equals 120. Set the shutter speed to 1/120. The base setting is set.

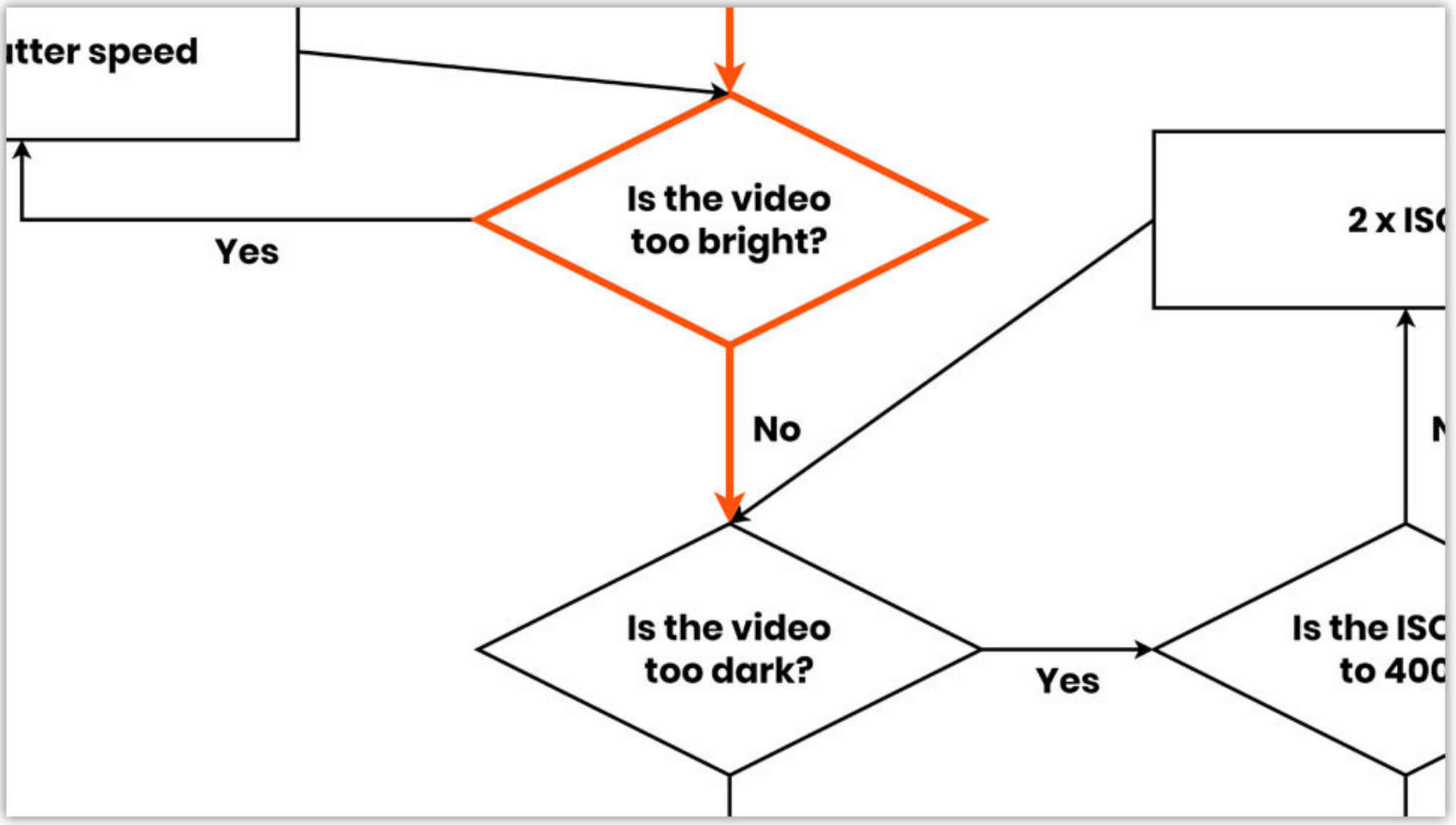


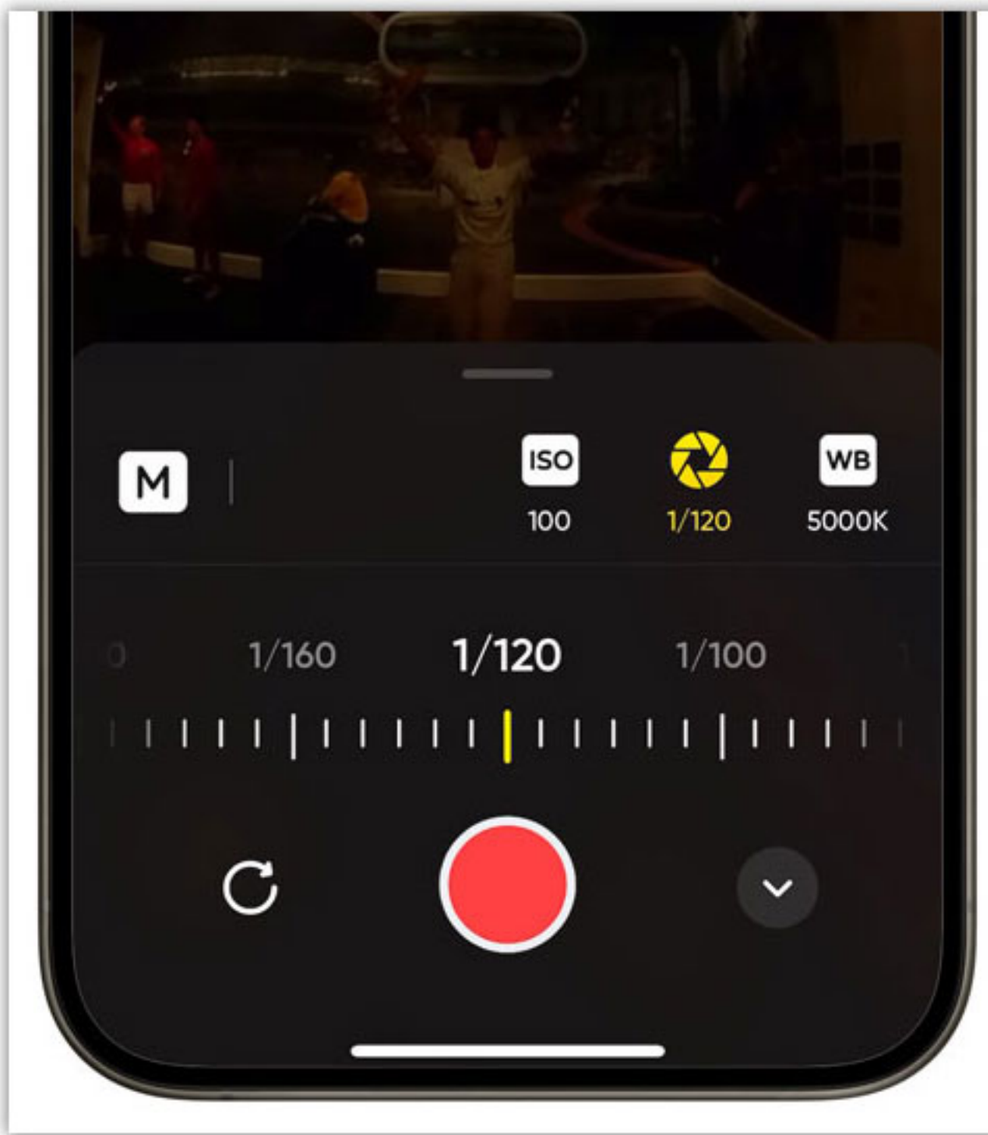




EX. LOWLIGHT WALK

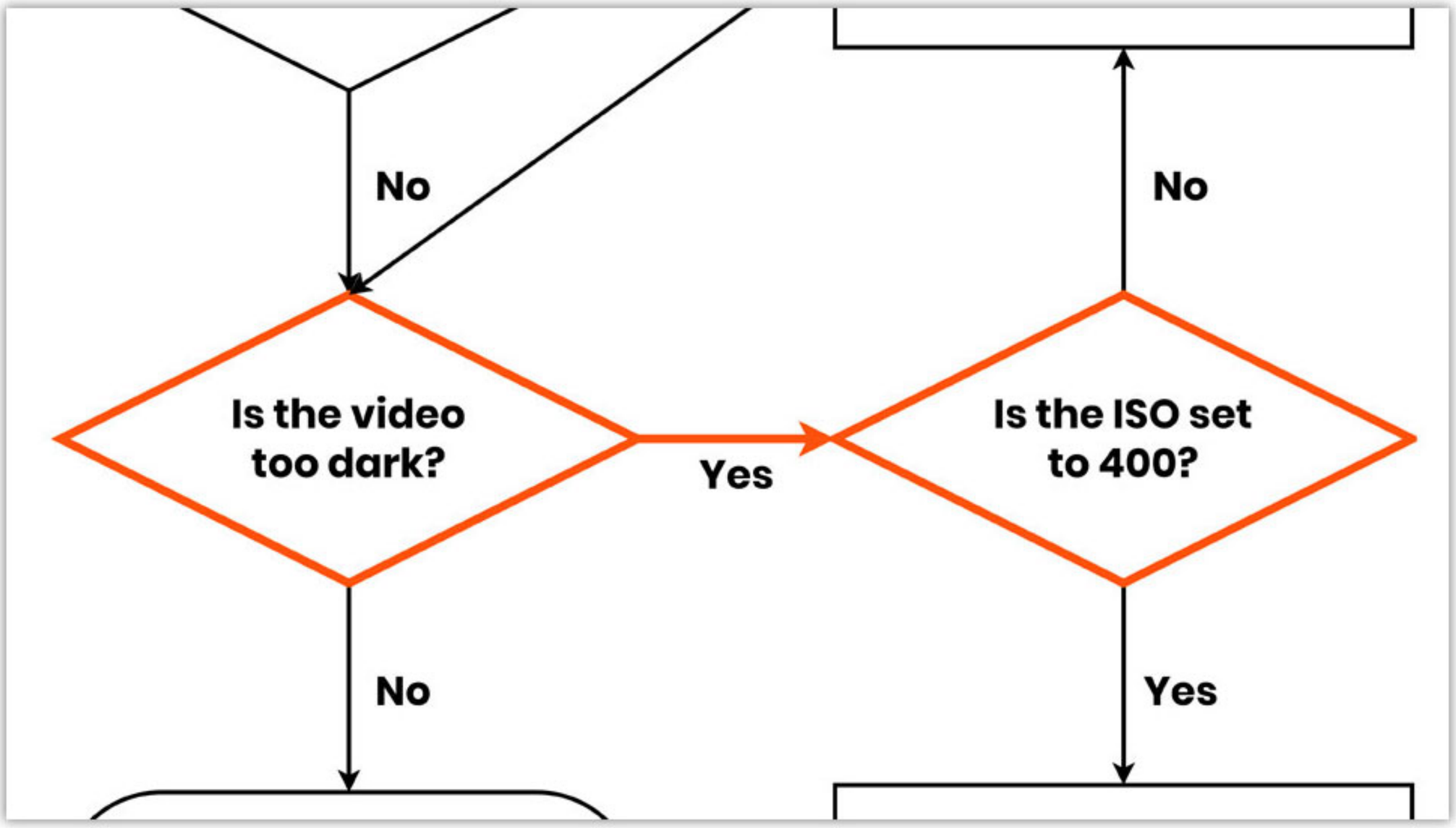
Is the video too bright? No, the video is not too bright.





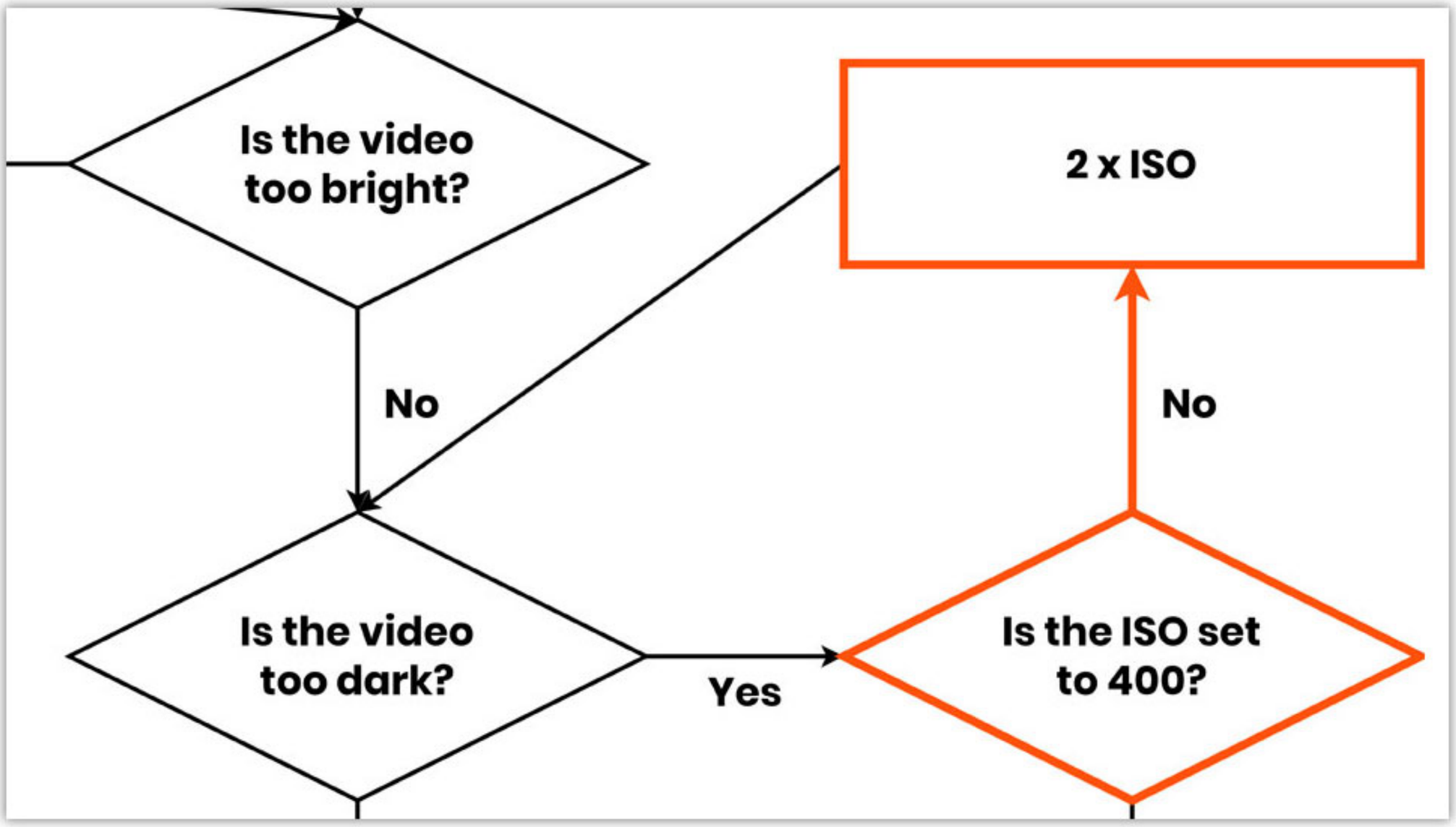
EX. LOWLIGHT WALK

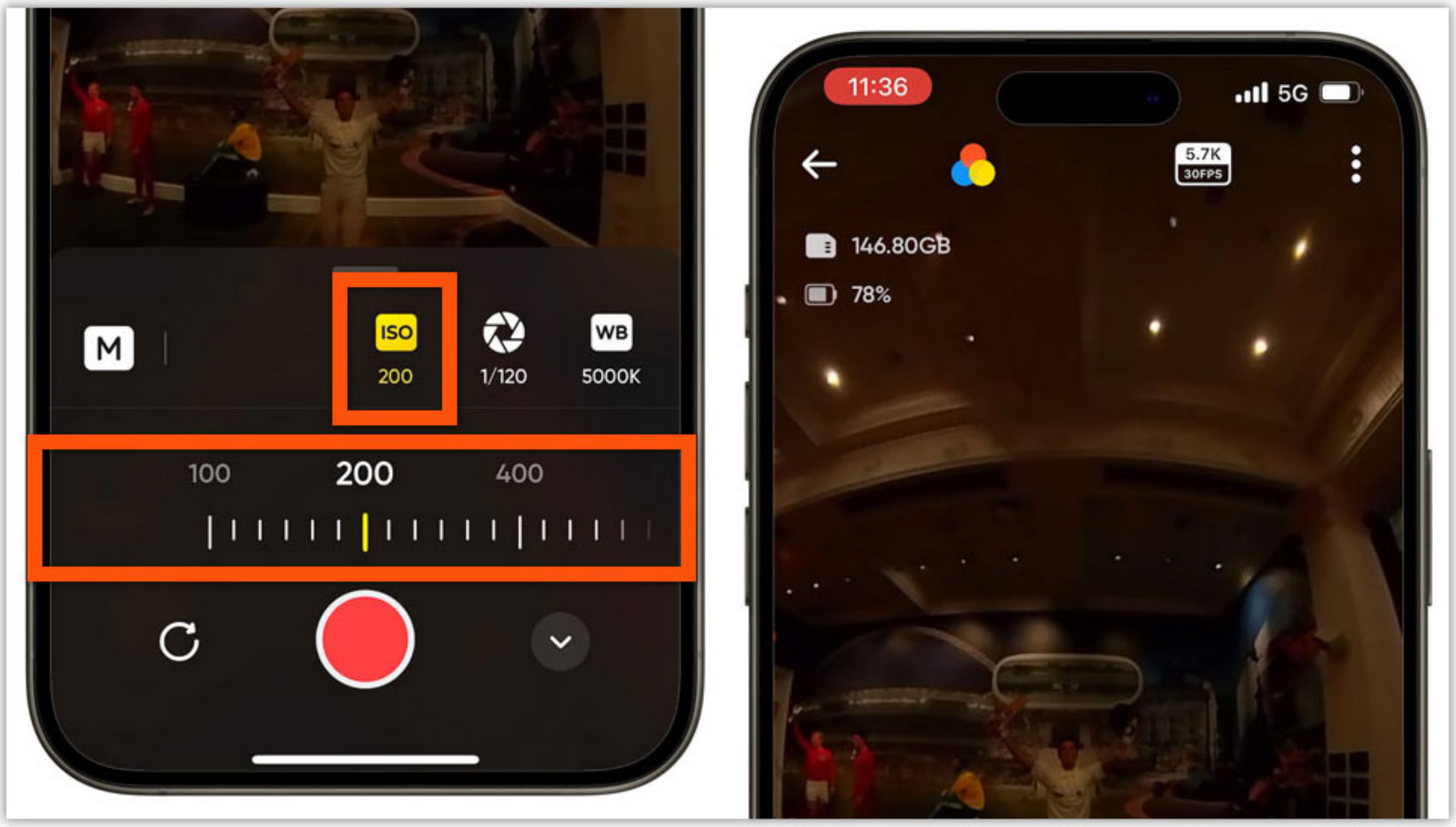
Is the video too dark? Yes, the video is too dark.



EX. LOWLIGHT WALK

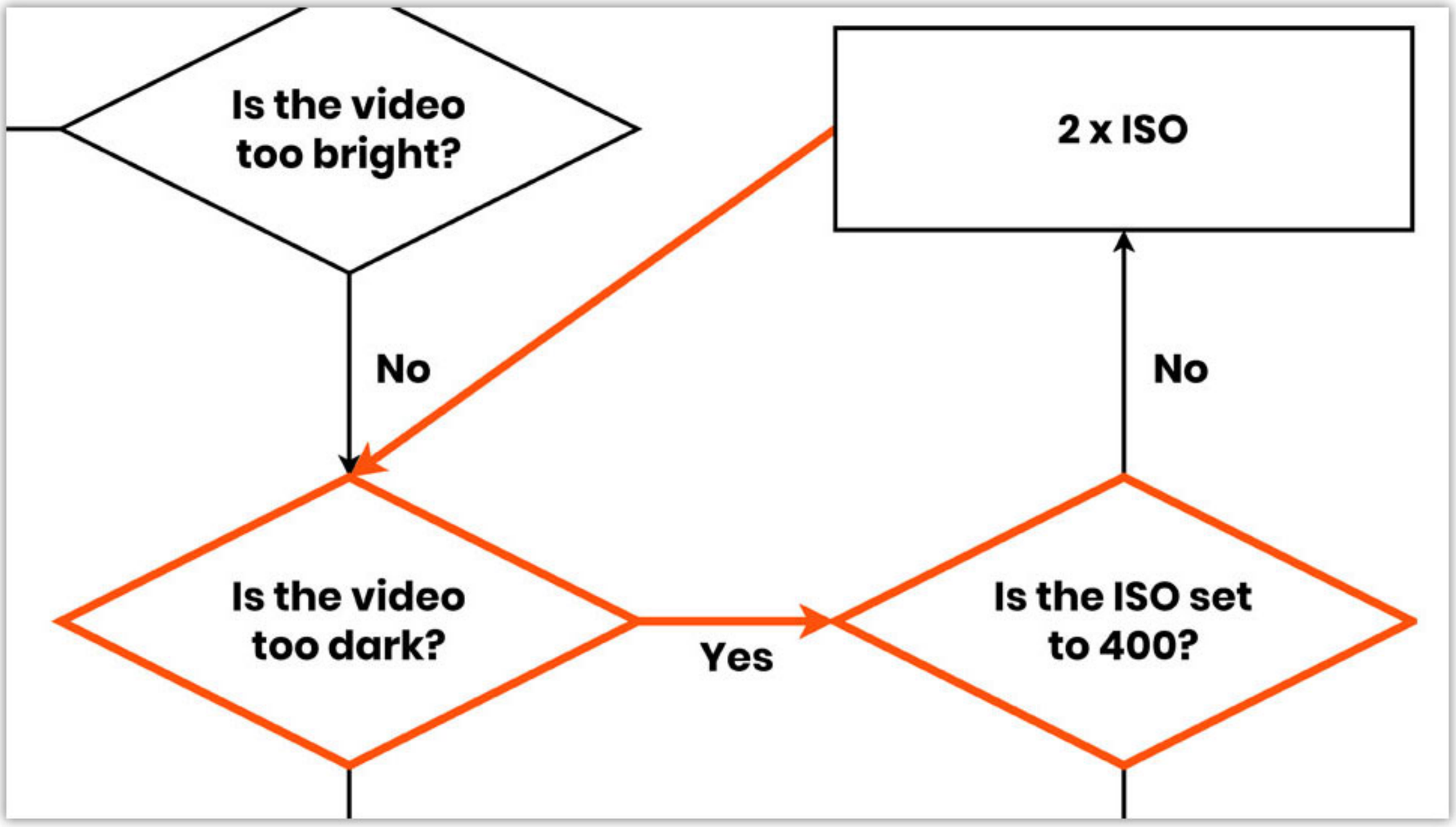
Is the ISO set to 400? No, the ISO is currently 100.
2 x ISO 100 equals ISO 200. Set the ISO to 200.





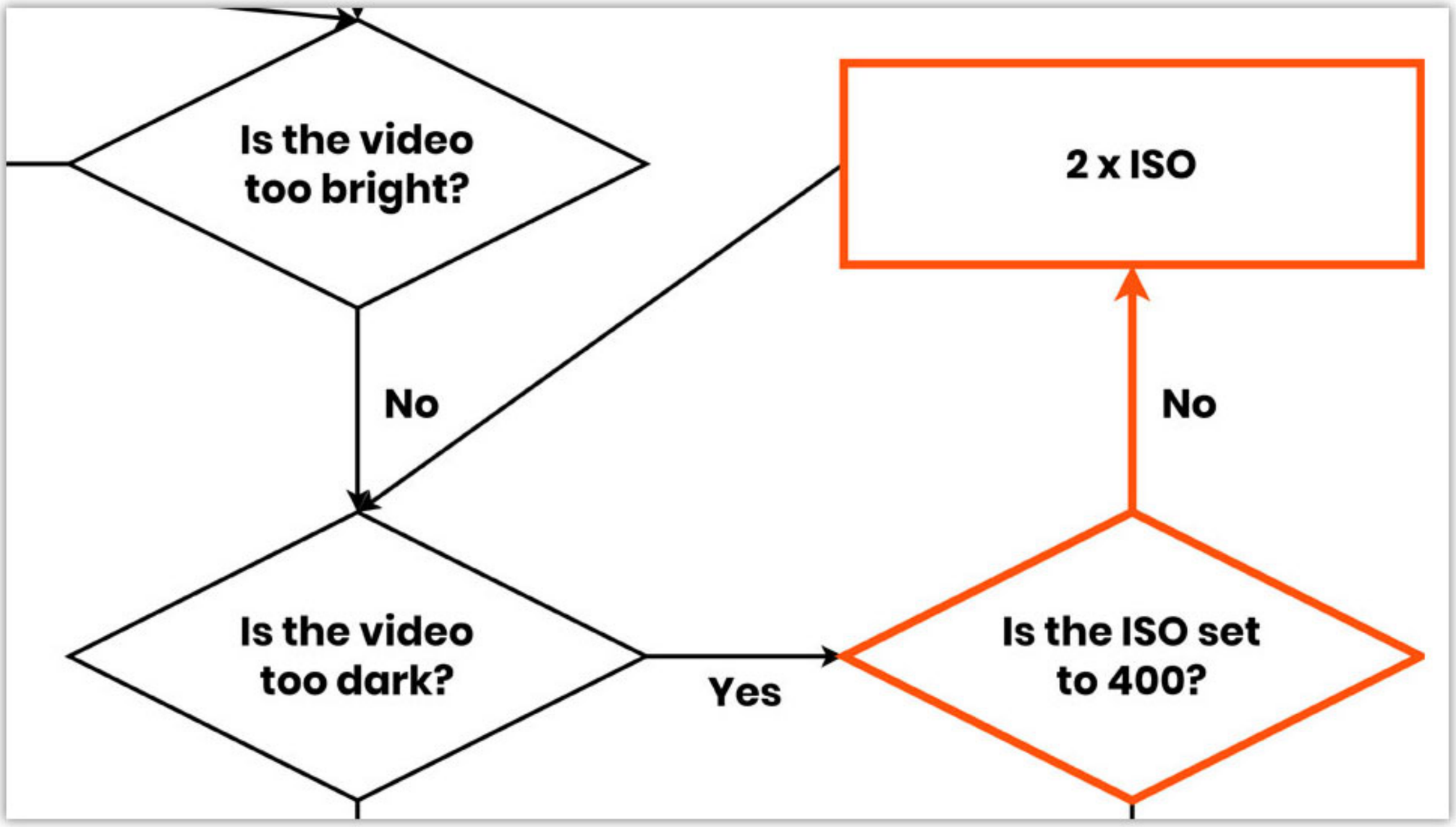
EX. LOWLIGHT WALK

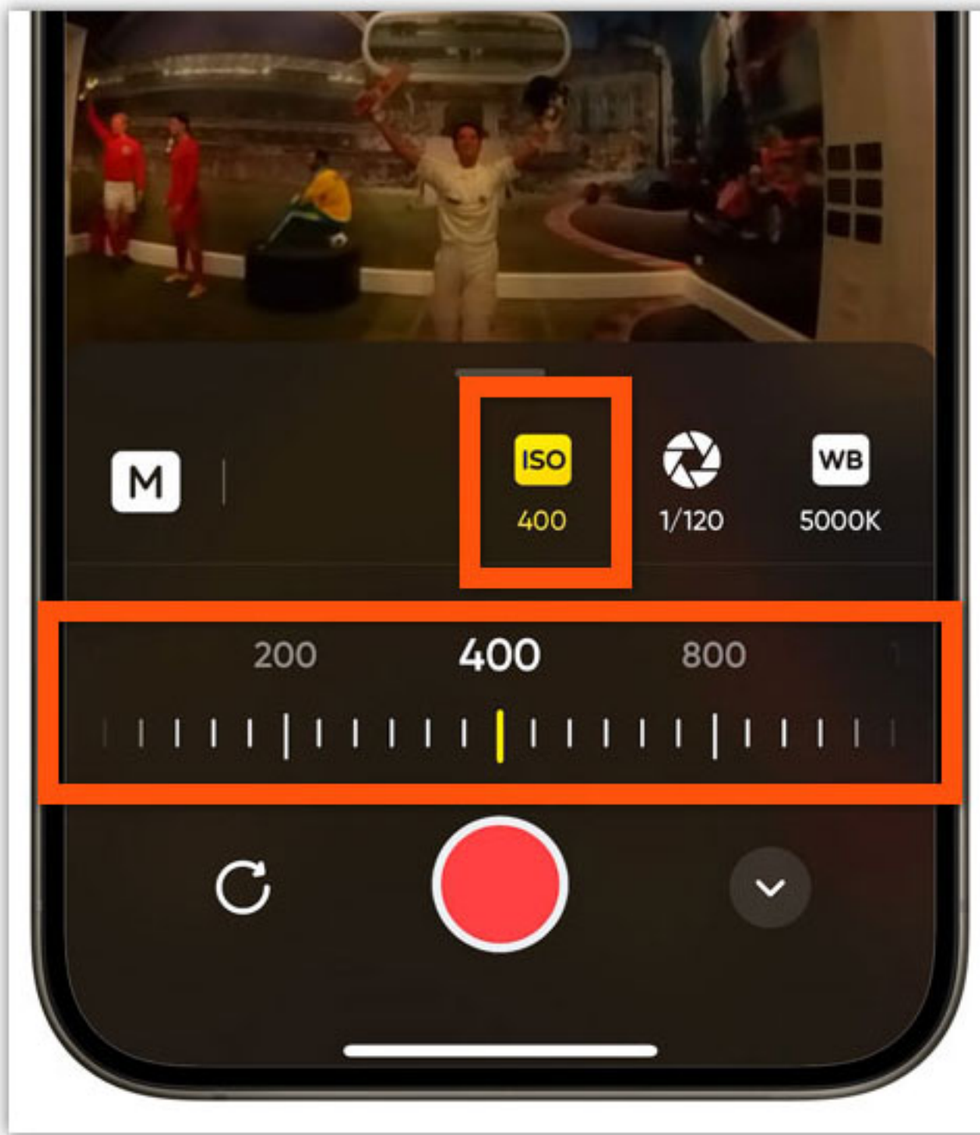
Is the video too dark? Yes, the video is too dark.



EX. LOWLIGHT WALK

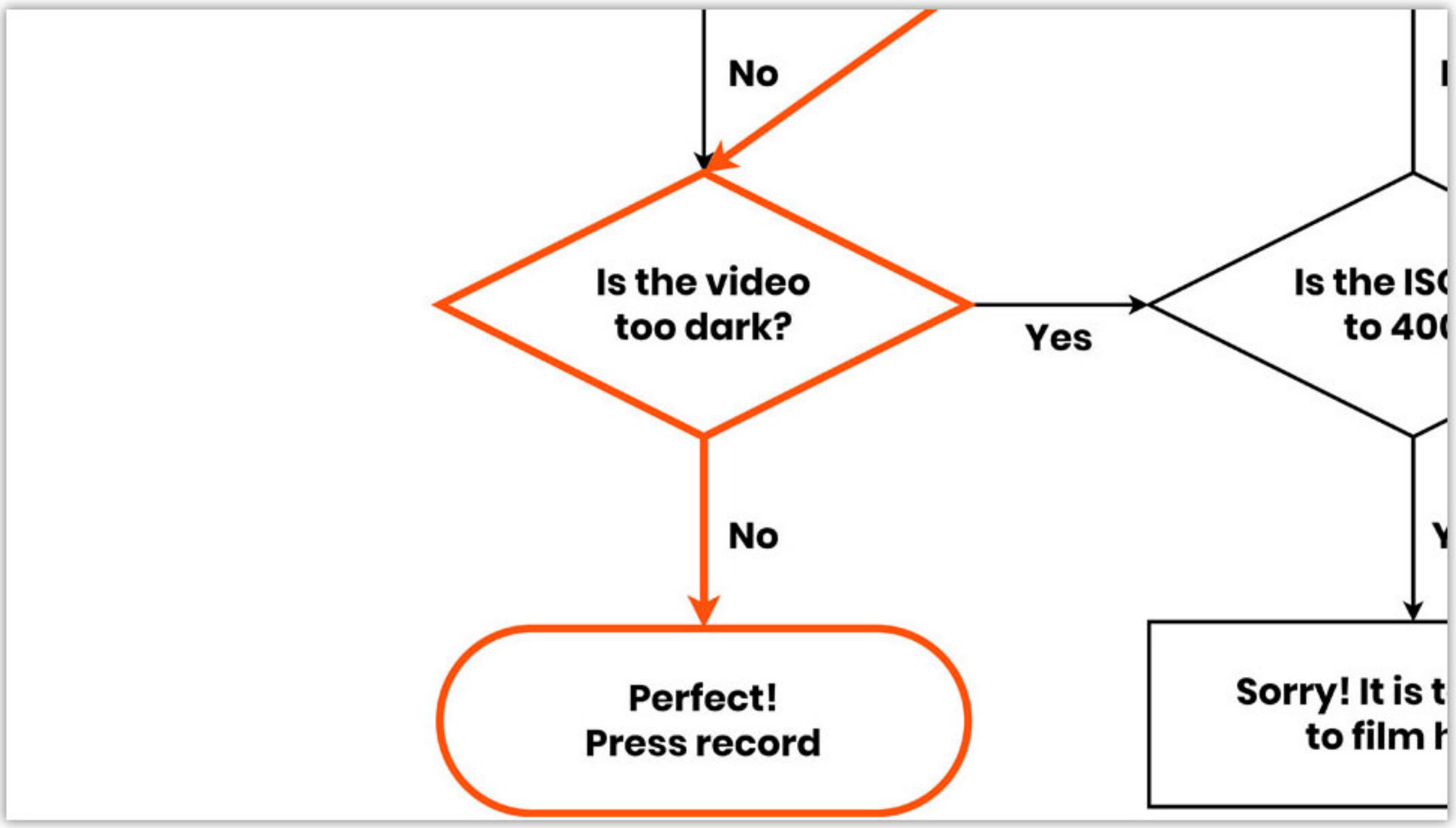
Is the ISO set to 400? No, the ISO is currently 200.
2 x ISO 200 equals ISO 400. Set the ISO to 400.





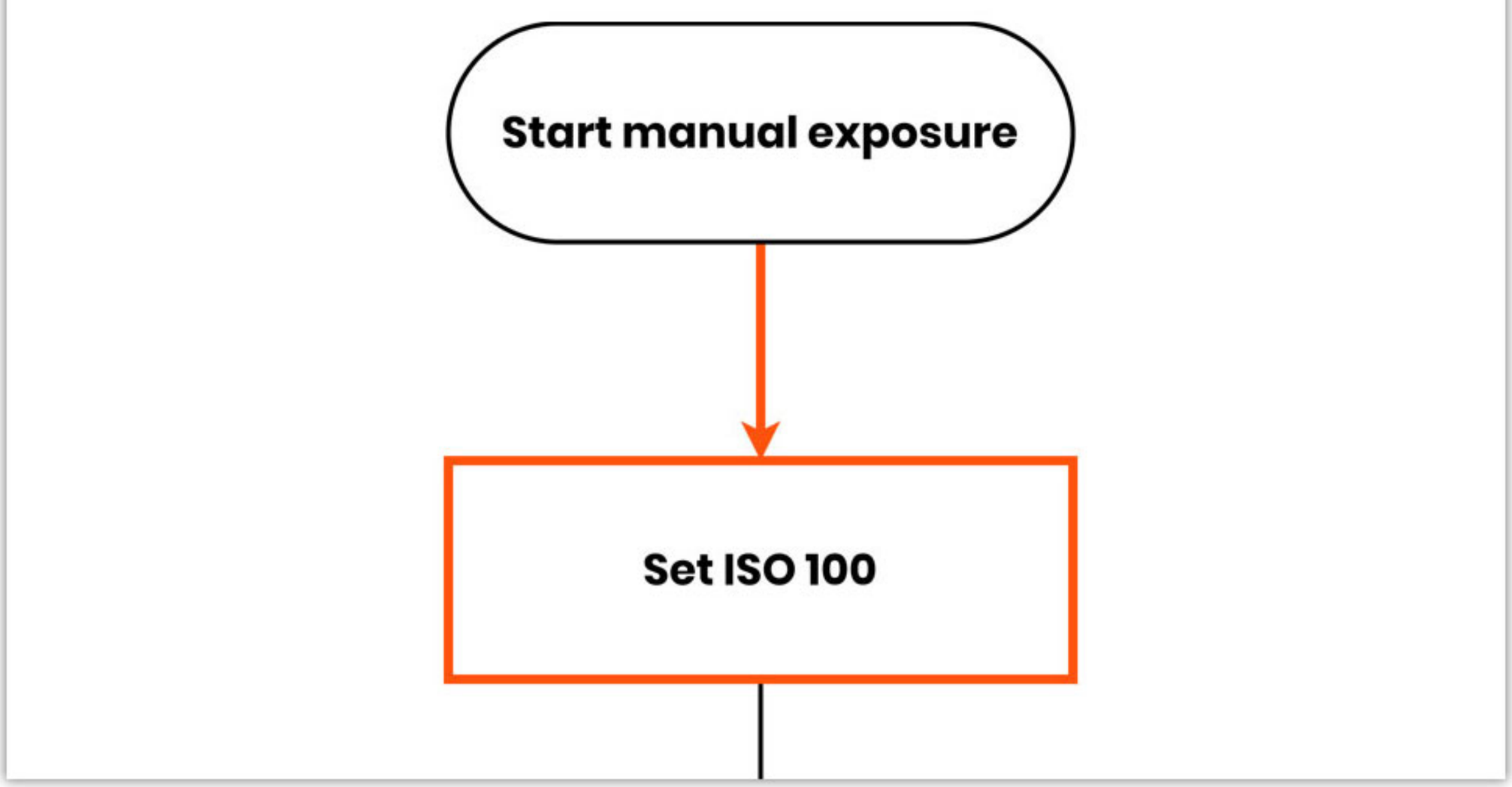
EX. LOWLIGHT WALK

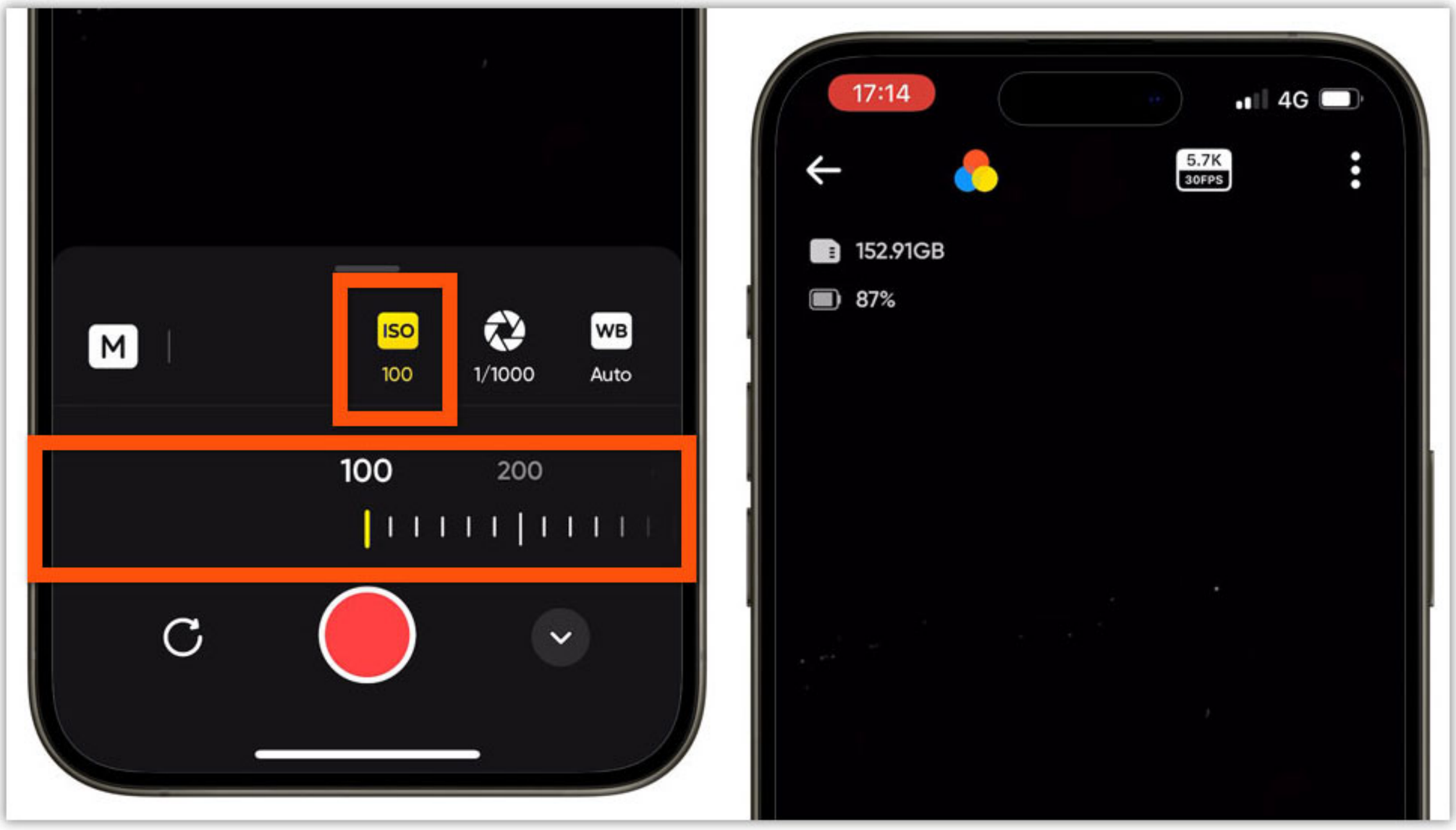
Is the video too dark? No, the video is not too dark. If it is any brighter, then the lights will overexpose. Press record and enjoy high quality video without noise or blur.



EX. SUPER LOWLIGHT WALK

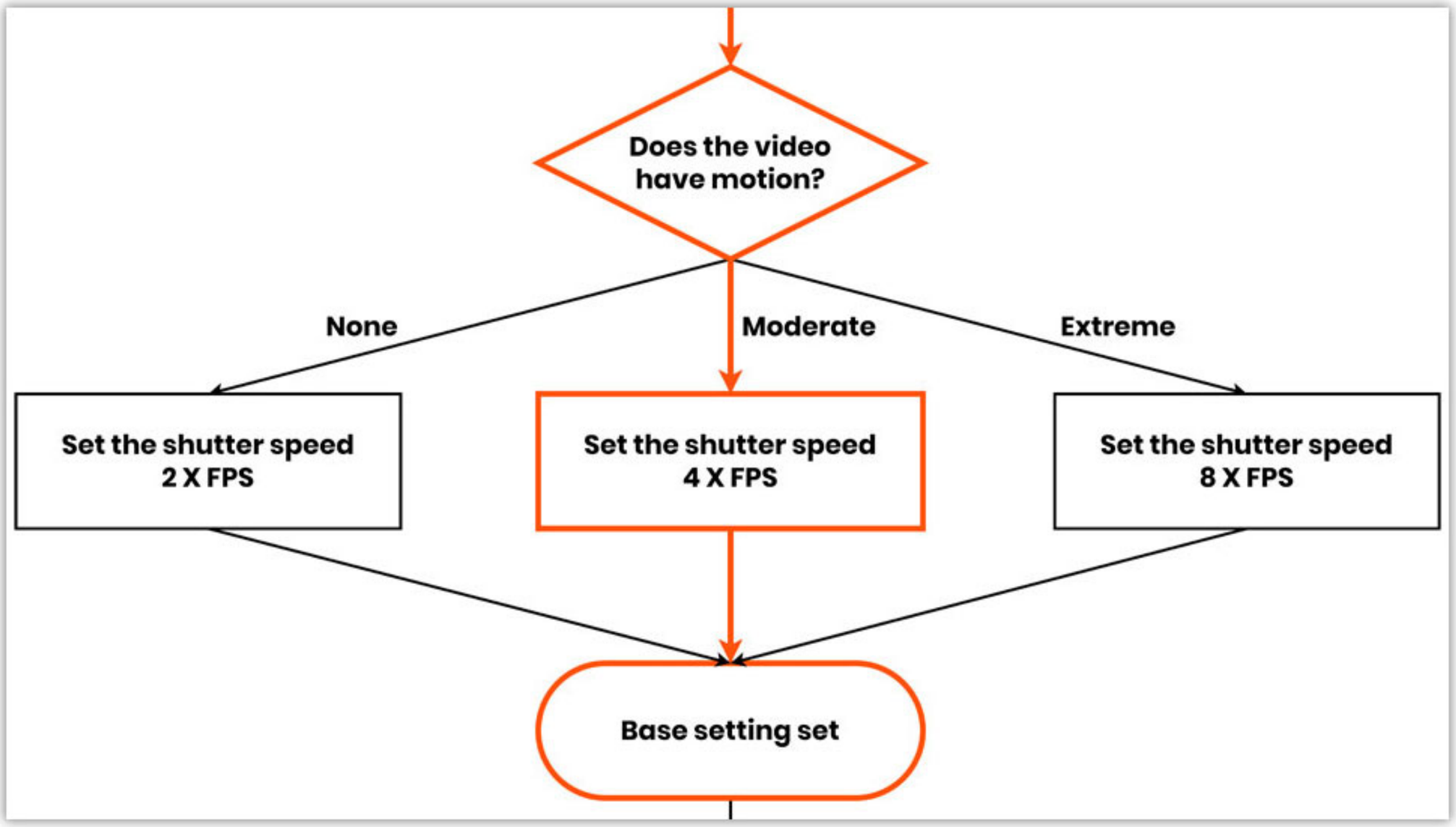
Let's say in this example, you want to walk with your 360 camera outdoors at night. Set the ISO to 100.

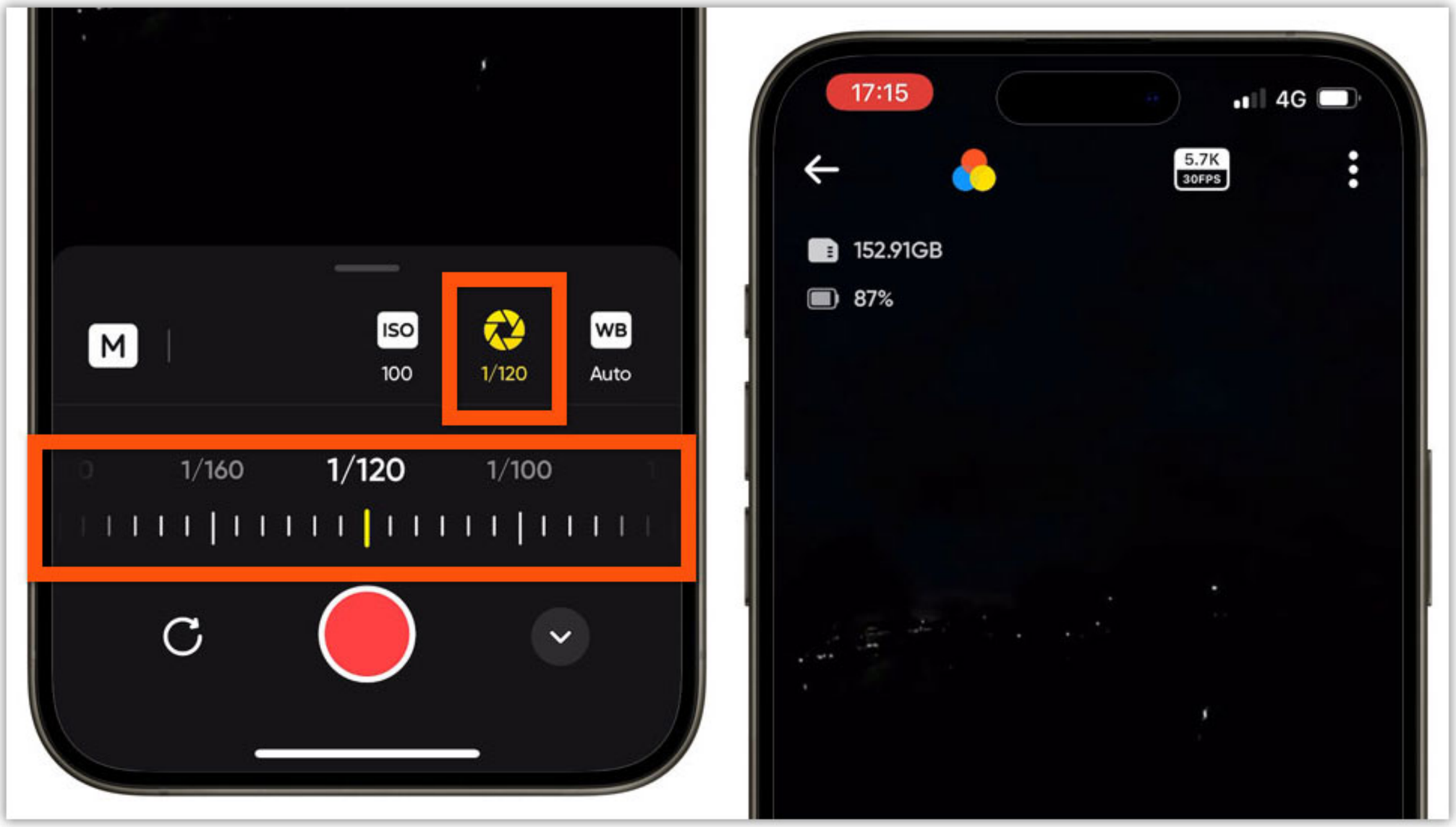




EX. SUPER LOWLIGHT WALK

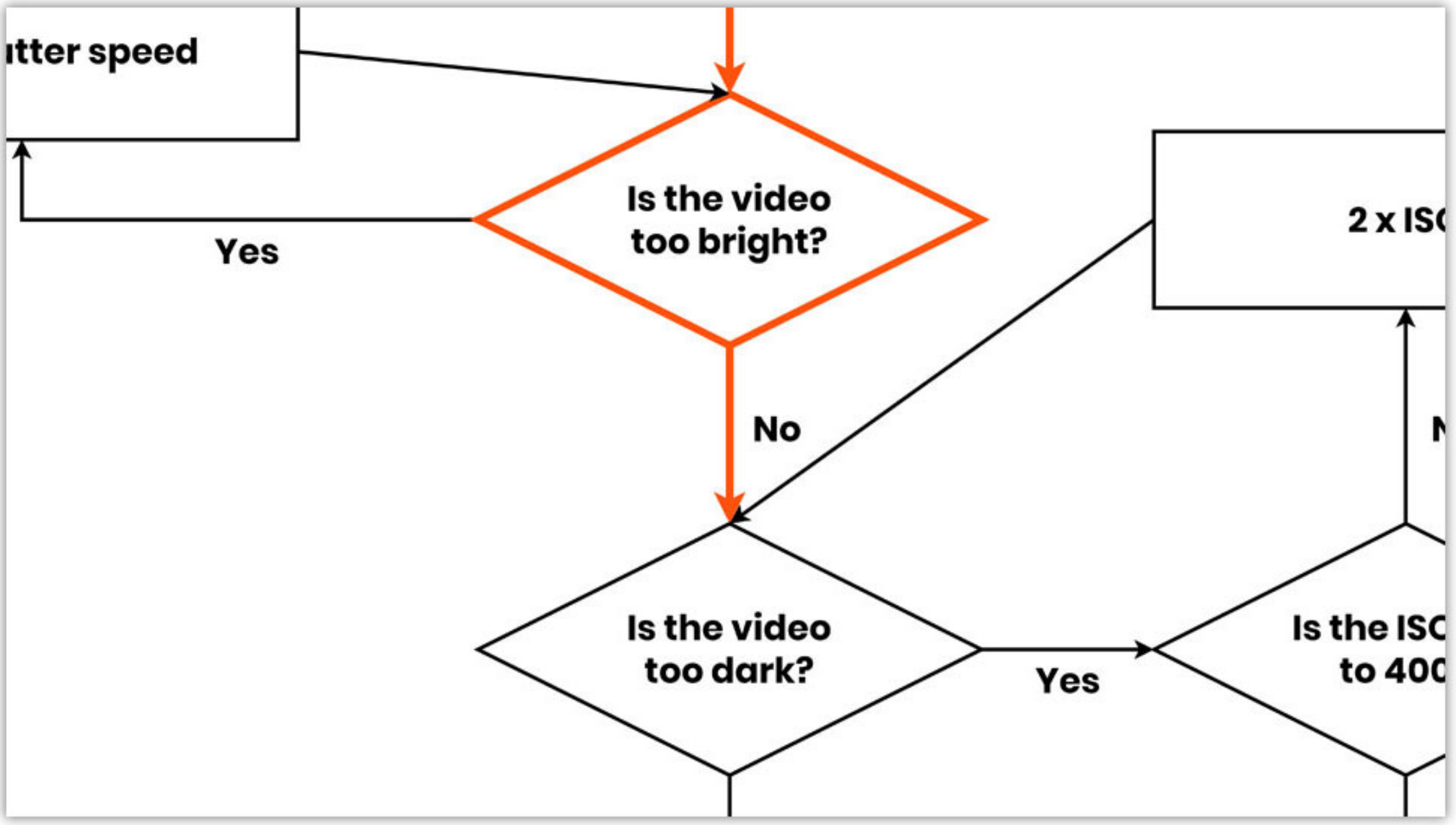
Does the video have motion? Yes, walking is moderate motion. 4 x 30fps equals 120. Set the shutter speed to 1/120. The base setting is set.

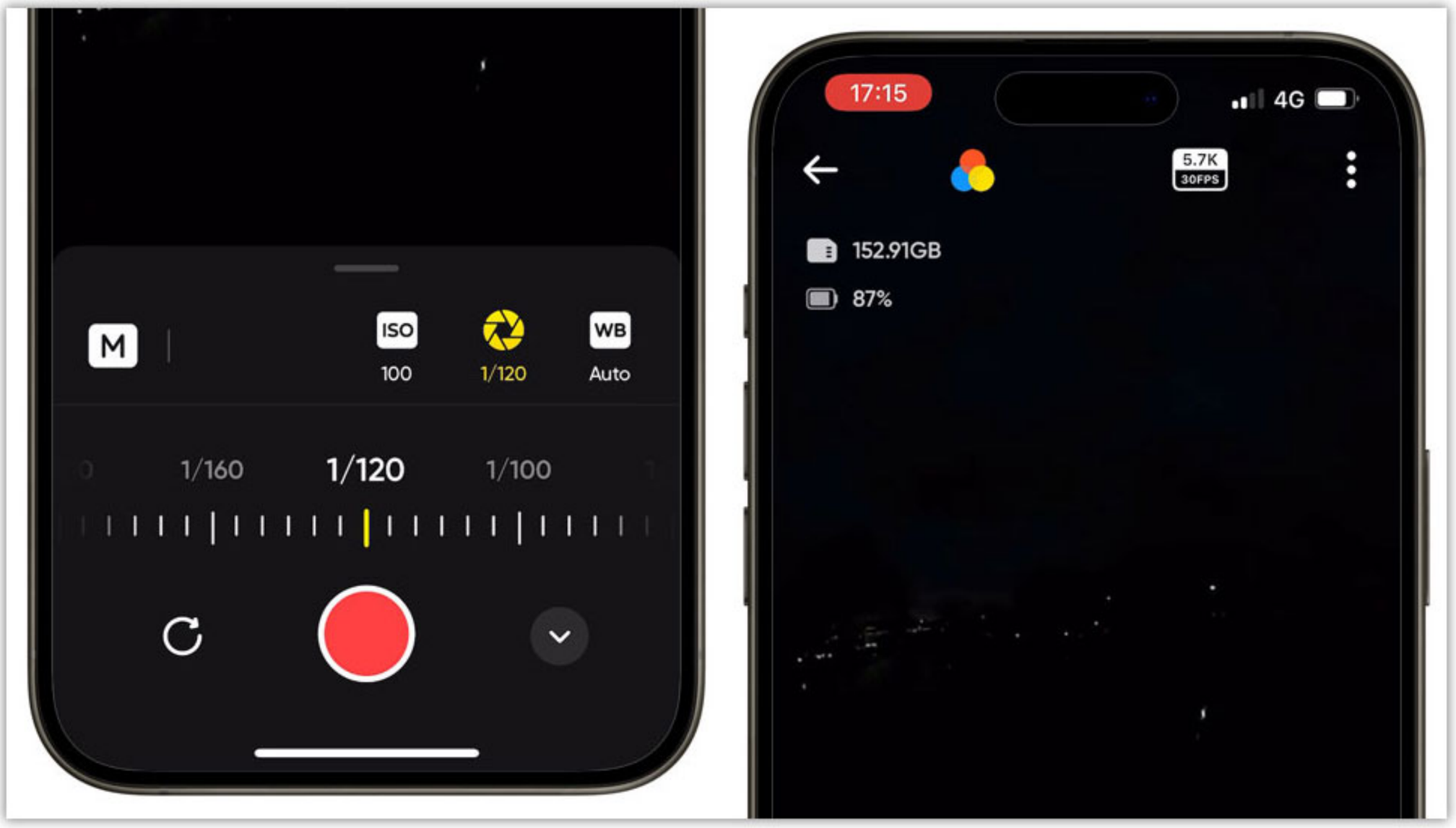




EX. SUPER LOWLIGHT WALK

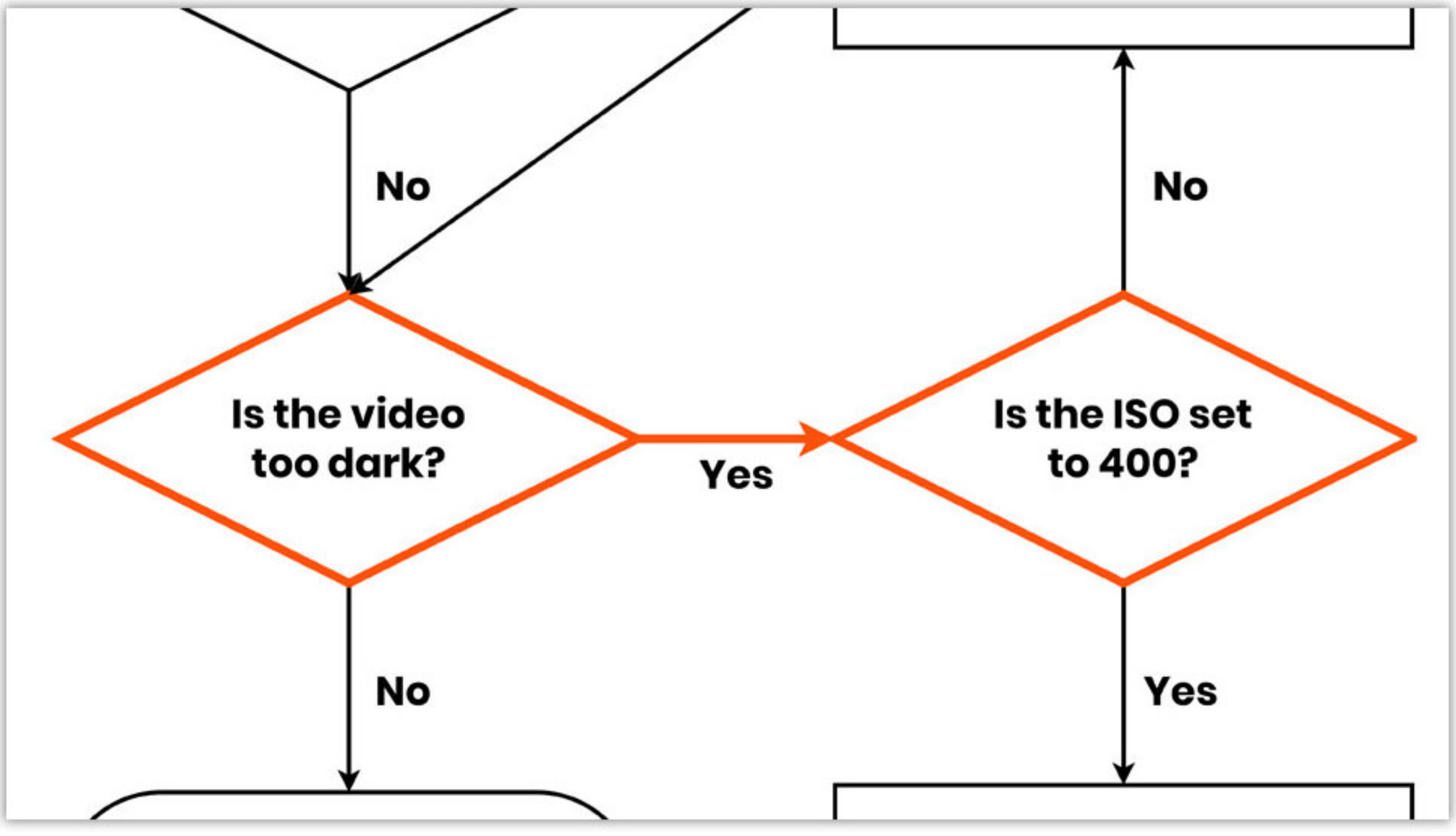
Is the video too bright? No, the video is not too bright.

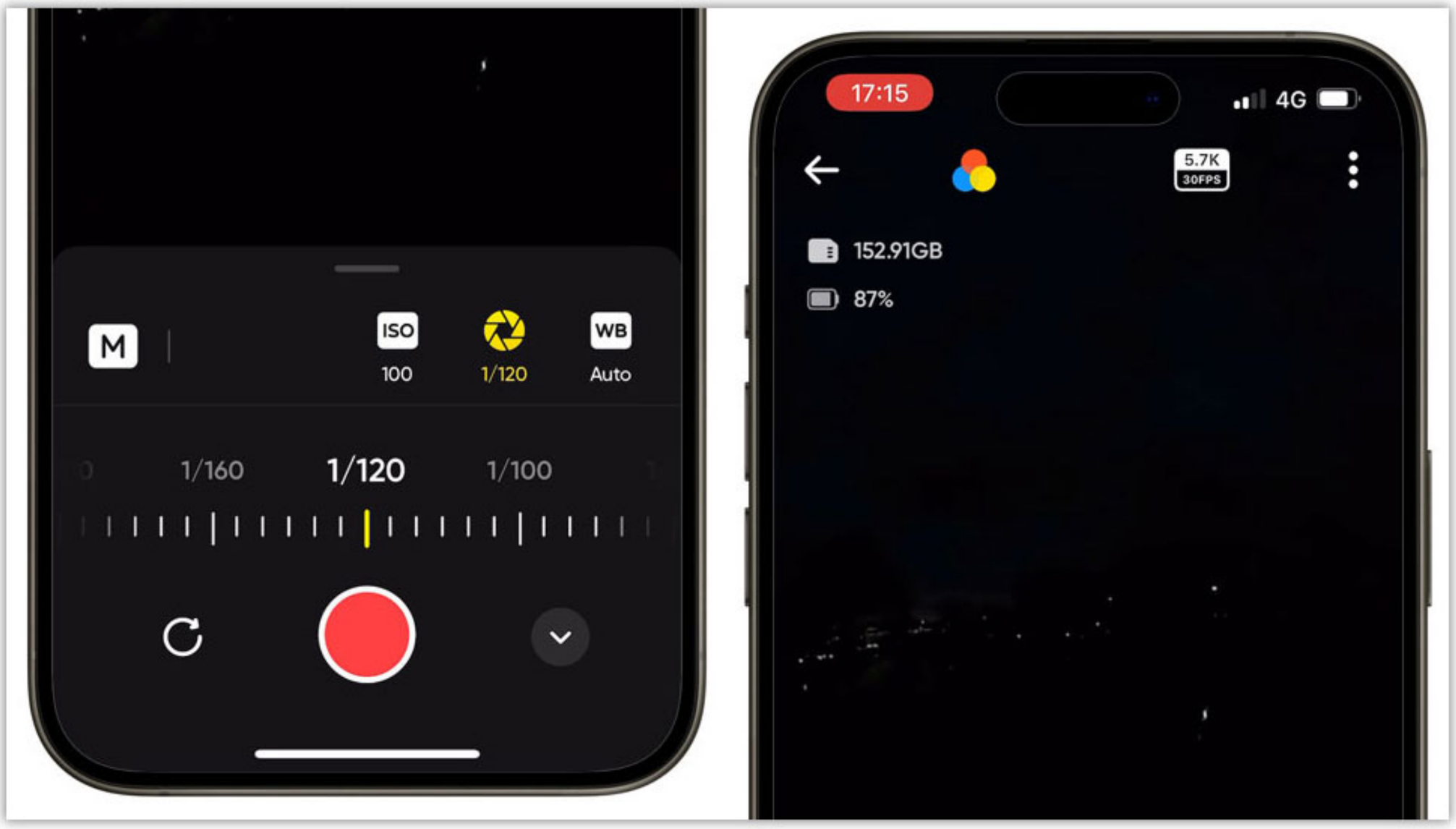




EX. SUPER LOWLIGHT WALK

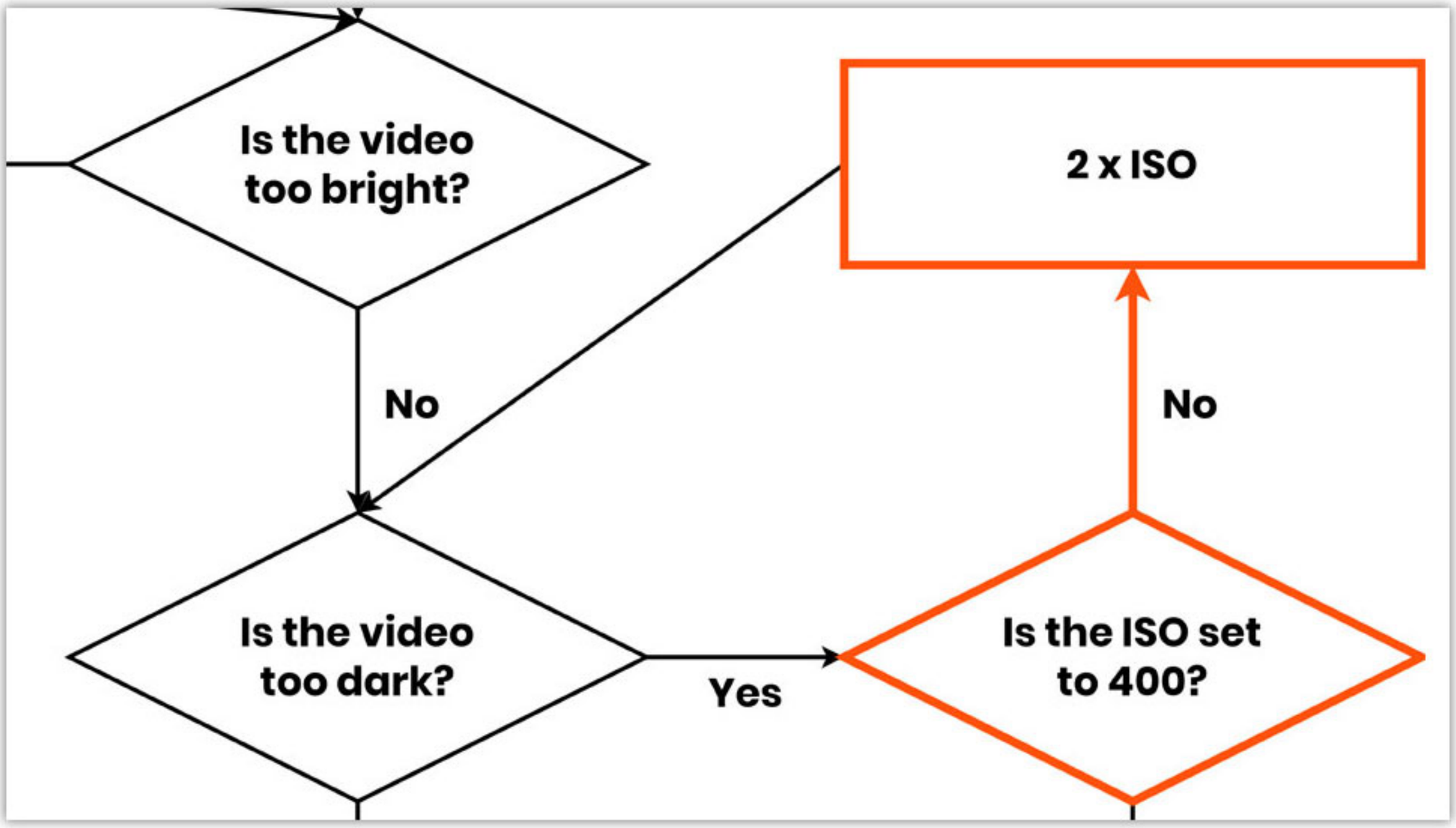
Is the video too dark? Yes, the video is too dark.

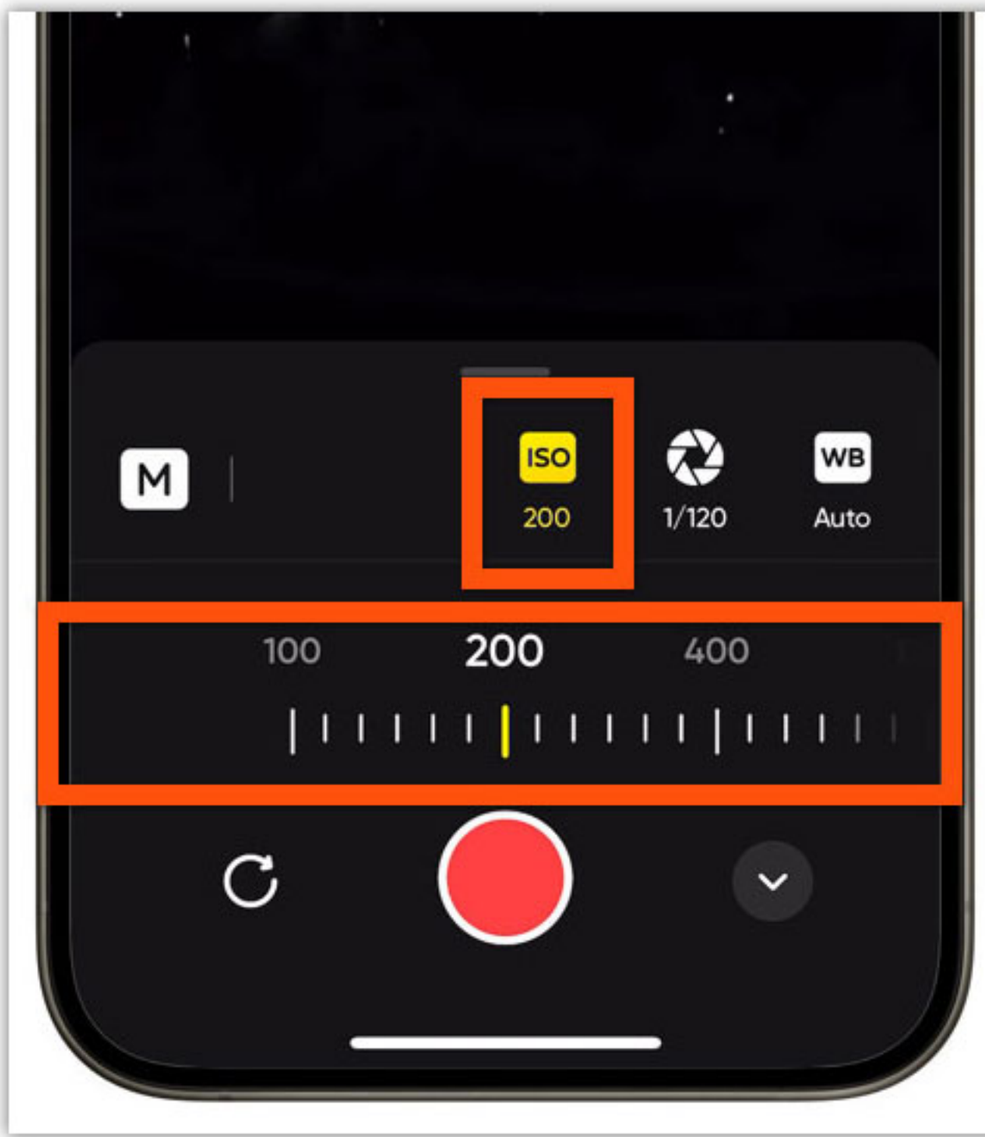




EX. SUPER LOWLIGHT WALK

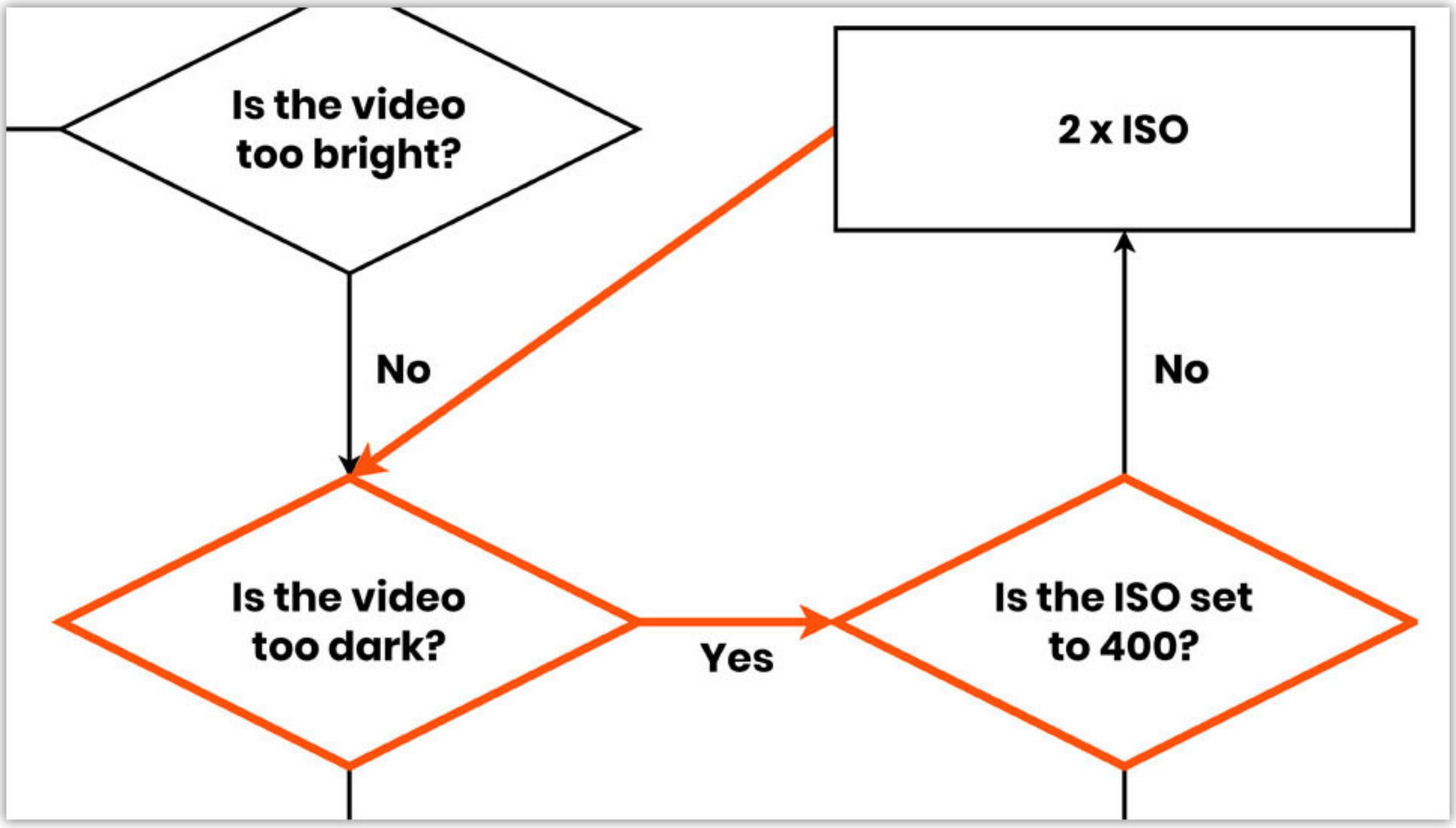
Is the ISO set to 400? No, the ISO is currently 100.
2 x ISO 100 equals ISO 200. Set the ISO to 200.

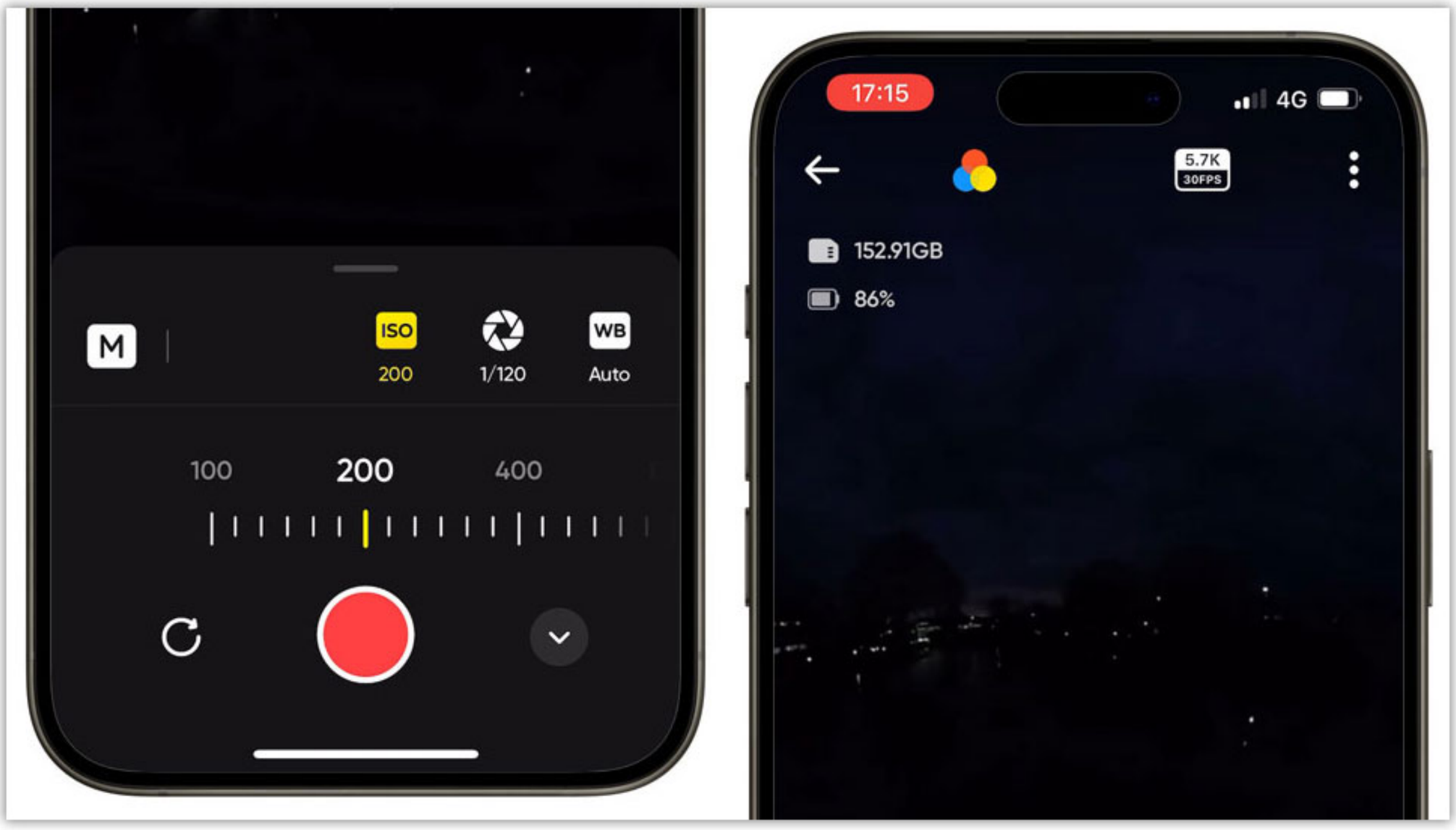




EX. SUPER LOWLIGHT WALK

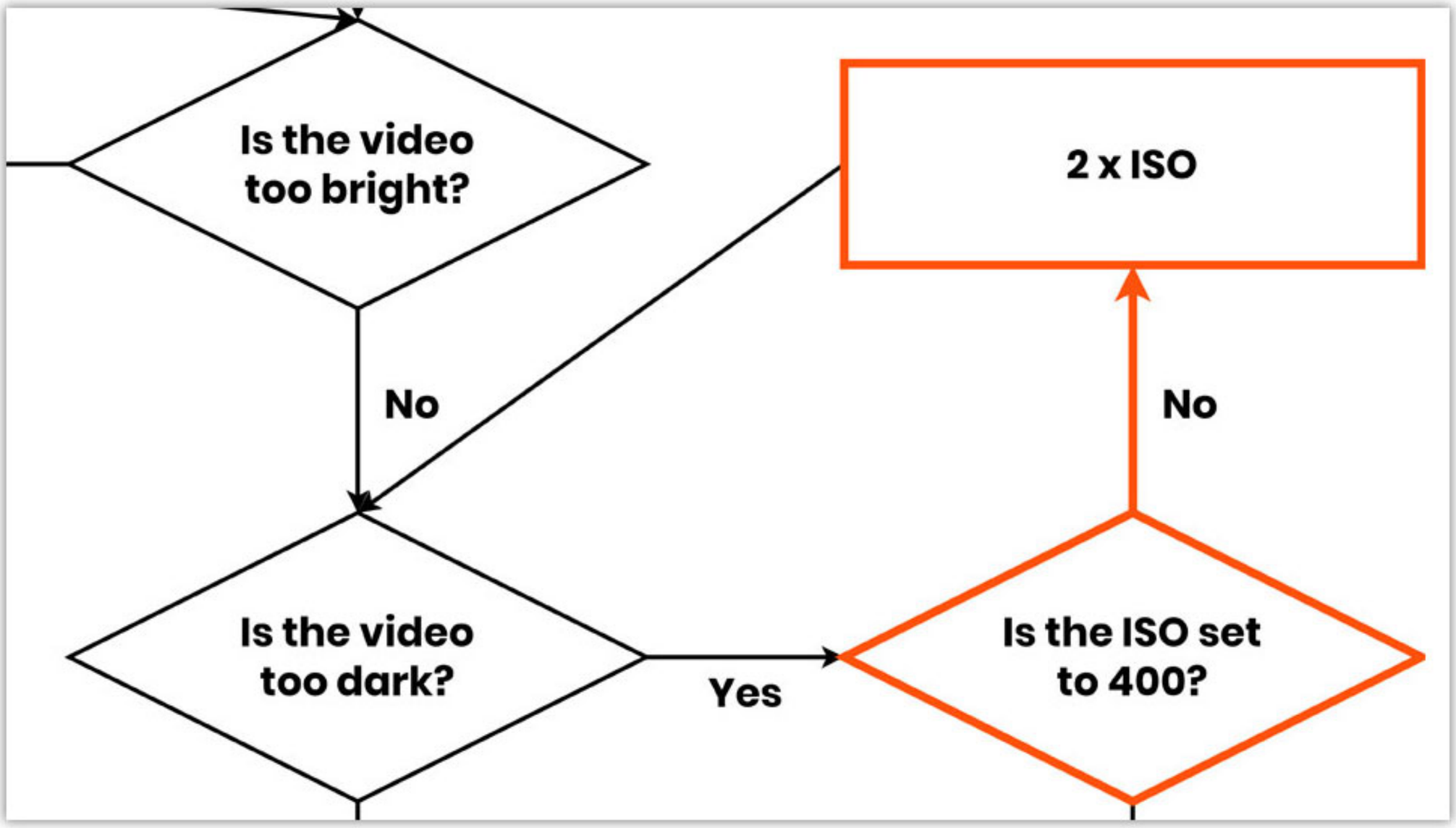
Is the video too dark? Yes, the video is too dark.

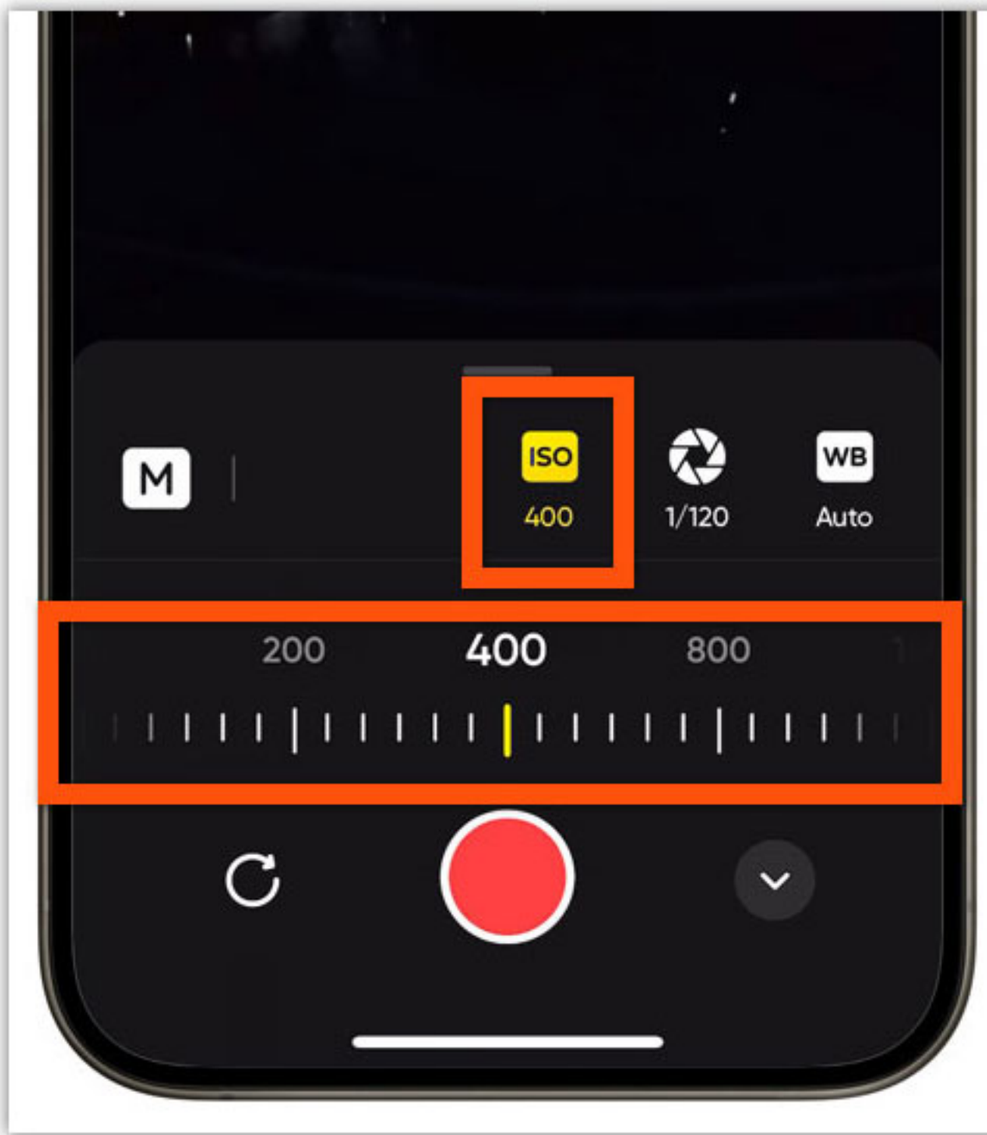




EX. SUPER LOWLIGHT WALK

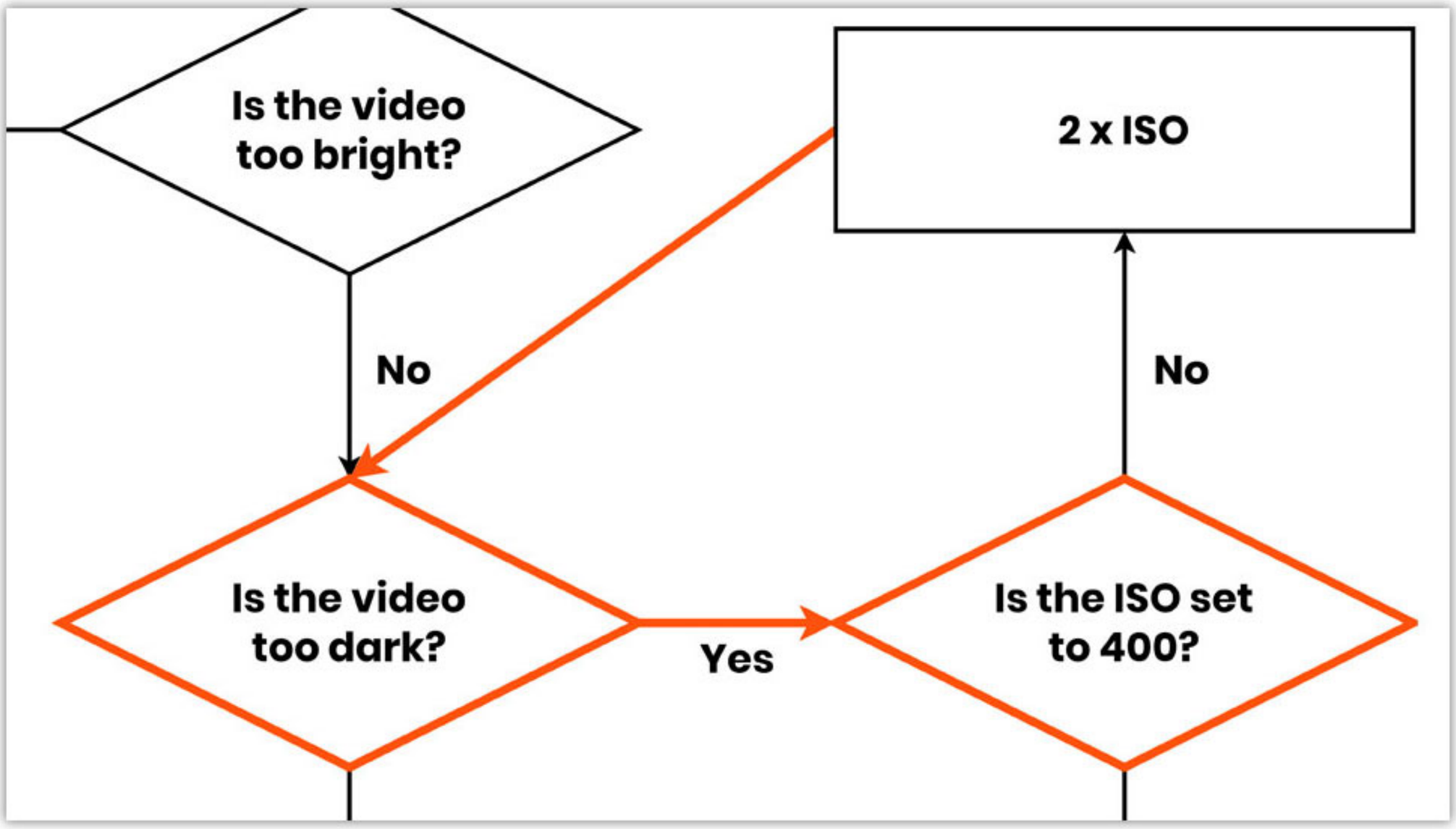
Is the ISO set to 400? No, the ISO is currently 200.
2 x ISO 200 equals ISO 400. Set the ISO to 400.

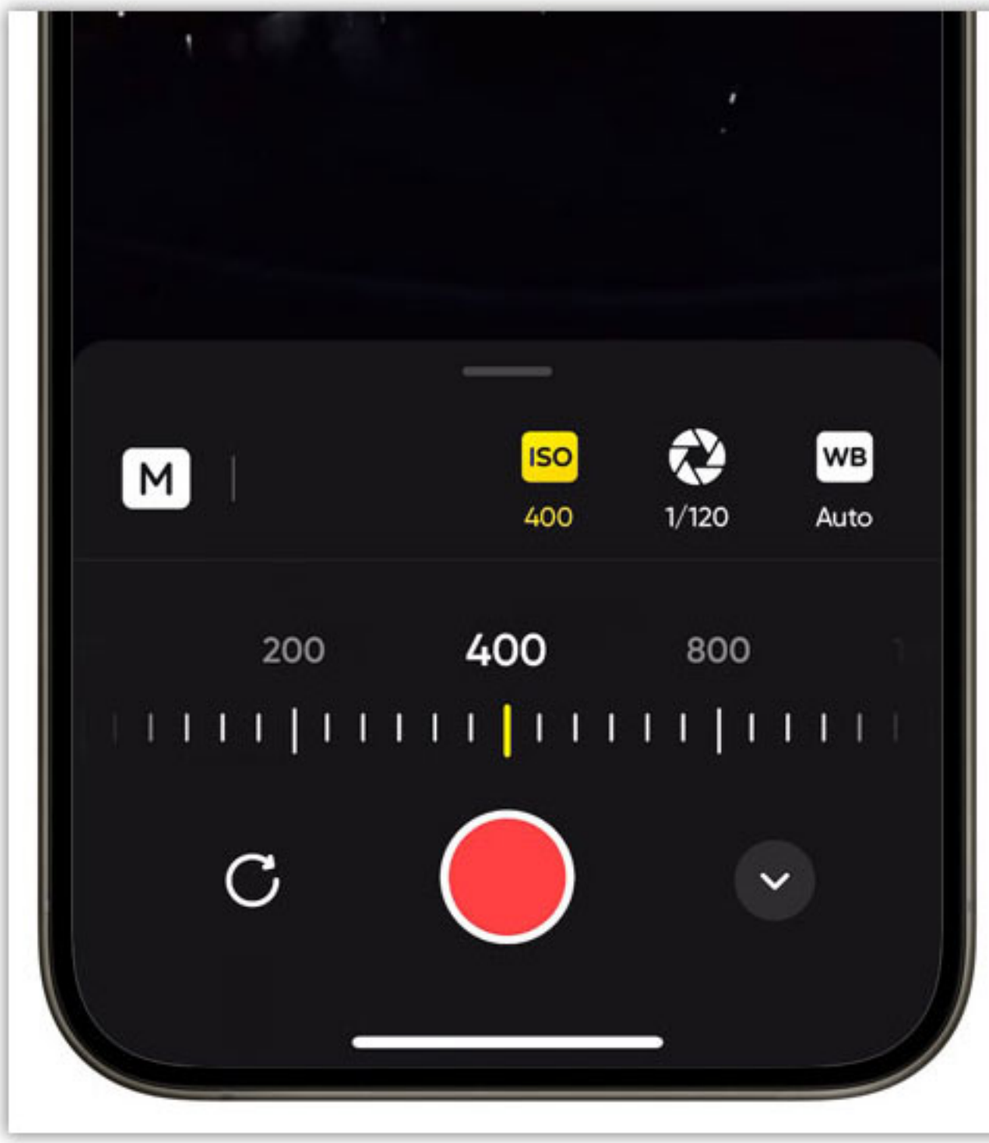


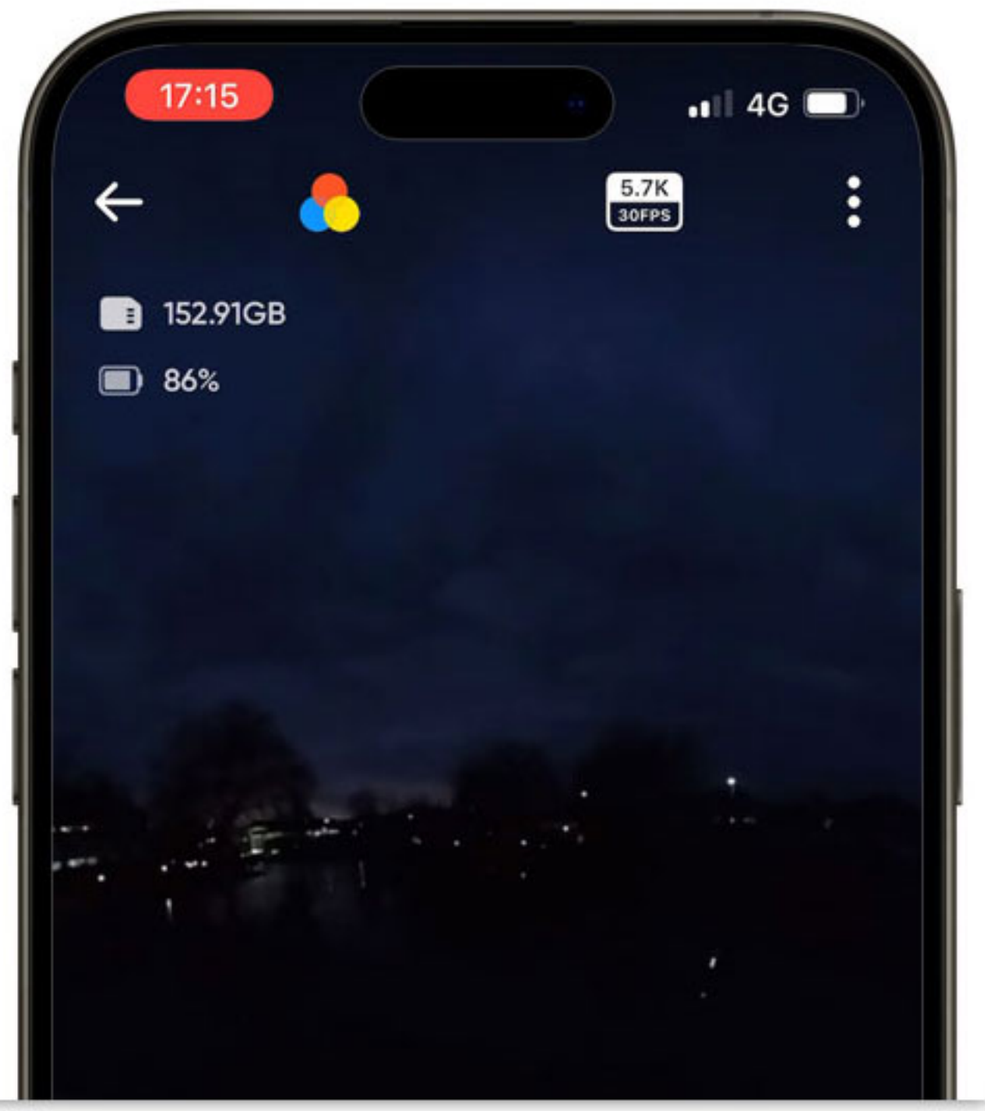


EX. SUPER LOWLIGHT WALK

Is the video too dark? Yes, the video is too dark.

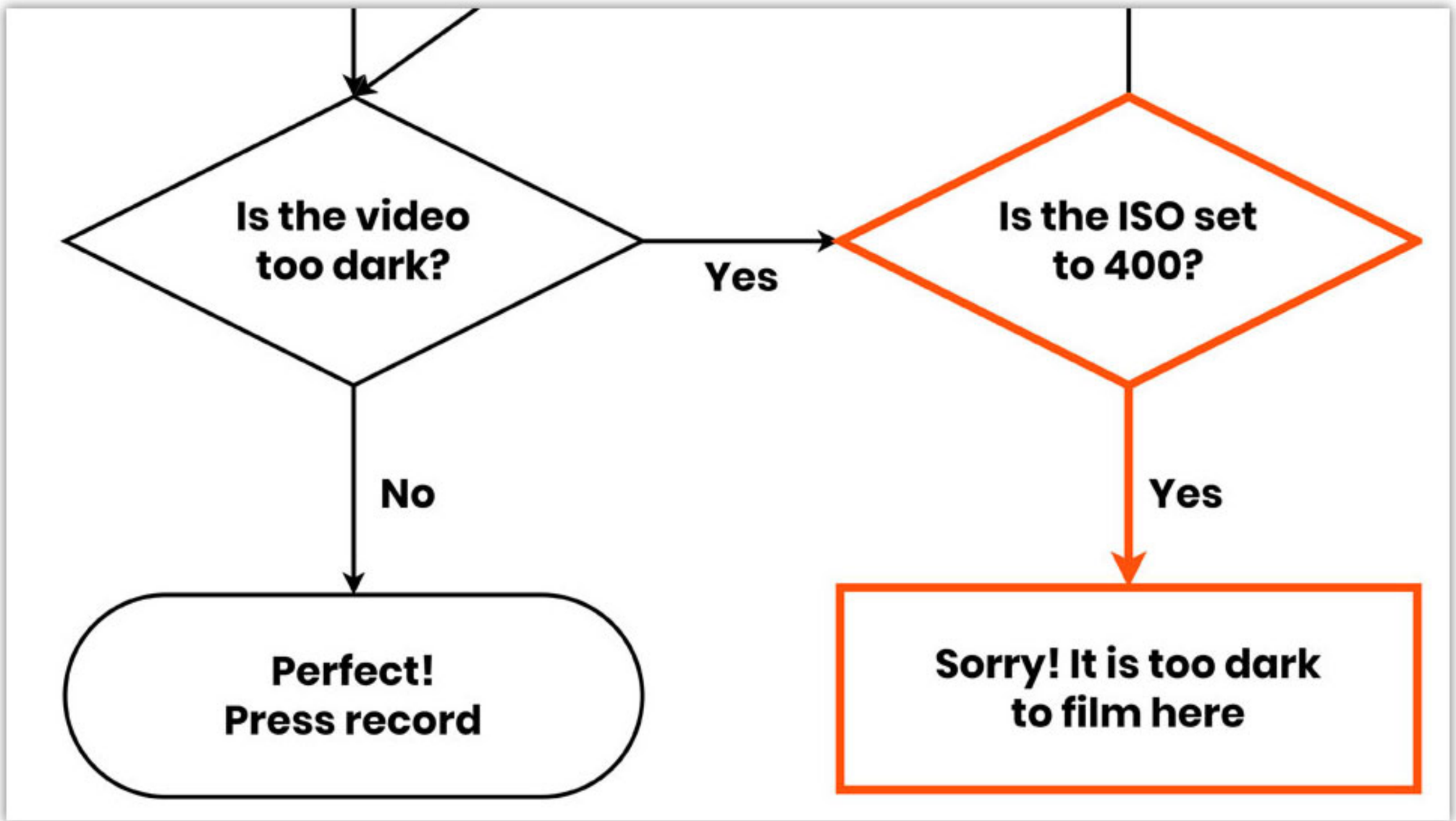


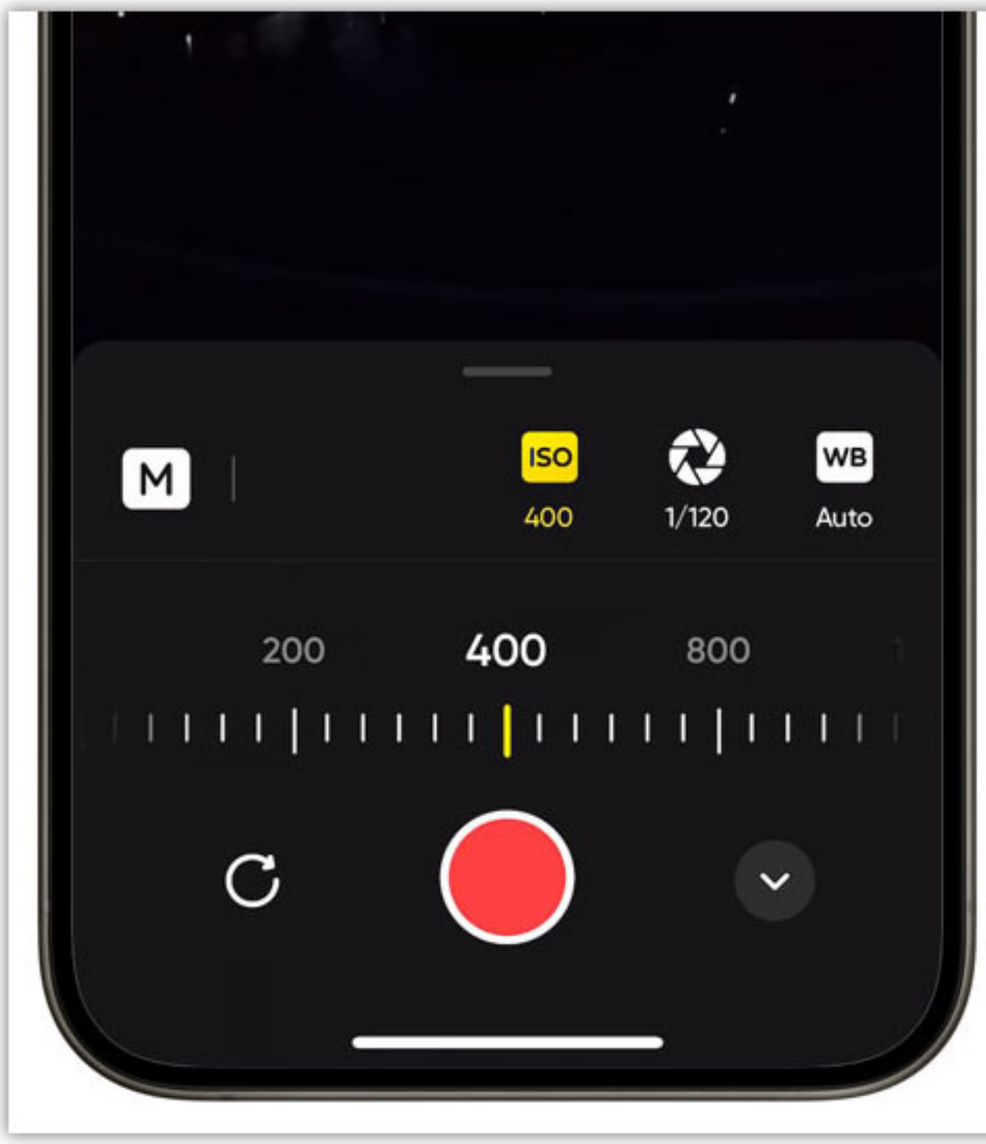




EX. SUPER LOWLIGHT WALK

Is the ISO set to 400? Yes, the ISO is set to 400. Unfortunately it is too dark to film high quality video here without noise and blur. Feel free to increase the ISO to 800 and beyond but the video quality will drop.





TROUBLESHOOTING

“I have light flickering in my video”
This is a shutter speed problem. To stop light flickering, the shutter speed will need to be tweaked from a multiple of 50 to 60, or vice versa. For example tweak the Shutter Speed:

1/50 => 1/60.
1/100 => 1/120.
1/200 => 1/240.

“My video still has micro jitters”
If you still have micro jitters in your video during your activity, using the moderate 4 x fps option, then try again using the extreme 8 x fps option.

“My video is too dark to expose the sky properly”
It is best practice to protect the highlights and record darker video, rather than record video which is too bright.

In editing a dark video can be colour graded to be brighter. But you cannot recover parts of the video which are too bright. This detail is lost forever.

“Manual exposure mode is too hard”
That’s ok. Use Automatic exposure mode instead.
On a bright sunny day, set the EV to -0.7. On a cloudy day, set the EV to +0.3. At night, auto exposure mode WILL cause blurry and noisy video.

PUREVIDEO MODE

The Insta360 X5 is the first 360 camera to introduce a dedicated night time video mode.

And it's really good at capturing night time video. In fact, it's better than using manual exposure settings in Standard 360 video mode.

The best night time settings in PureVideo Mode are:

Colour: Standard

Resolution and framerate: 8K30

EV: -0.7

WB: Set to Auto. Let the camera pick the best setting automatically. Then switch to Manual to lock the White Balance setting.

Try not to move or shake the camera too much otherwise there will be micro jitters and blur. Make slow and smooth movements for the best results.