Running Form -

This information is for athletes who want to improve their running. With this information, the videos you took and your coaches' guidance you can be a better runner if you put in the work.

Eye/Focus:
• focused gaze helps maintain proper posture, which keeps your neck in proper alignment with your spine, this means looking ahead, about 10-20 feet.
• Looking down or up makes it harder to breathe and throws your body out of alignment, decreasing your efficiency and making it harder to run

Shoulders:
• open up your shoulders while you run, almost like you're squeezing a pencil between your shoulder blades
• Shoulders are moving and opposite of one another and flow with your rotating torso. So when you take a right step forward, your left shoulder is also forward with your torso twisted to the right, and therefore your right shoulder is back as your left leg is back. They should operate in that X pattern. As the run goes on, it is common to get tight and tense in your shoulder area, almost like you're shrugging. But this will cost your body valuable energy so it's important to stay relaxed. Shake out your arms, roll your shoulders back, and focus on loosening up, especially as you get fatigued. (this is what we are talking about when we say "relax/drop your shoulders")

Arms:
• The way you move your arms can help you move faster or slow you down. Your arms should be at a 90-degree angle. Your palms or fists move from chin to hip. That's going to help you propel your body forward. Keep your elbows close to your sides.
• If your elbows point outwards, that means your arms are crossing your body, which actually slows you down—you won't be able to get the momentum you need. Try pointing your thumbs to the ceiling to keep your arms in line or imagining an invisible line that runs down the center of your body—don't let your hands cross over that line.
• Your hands should not pump above your heart unless sprinting.
• Relaxed fingers in the hand, like your holding a potato chip but not crushing it.

Posture:
• Tall spine so that you're not crunched down, because if you're crunched down, you can't use any of that elastic energy that comes from the ground up
• When you're running, you want to lean forward slightly into the run versus running completely upright.
• That lean should come from your hips, not from rolling your shoulders forward. This means engaging the glutes. (why you need butt workouts)
• You should be as close to perpendicular as possible when the foot hits the ground.

Foot Strike:
Everyone is different and your foot strike is what comes natural to you as long as it's working for you. Some runners experience injuries changing their foot strike.When you watch your video, look from the front and see if your knees knock
inwards and how much your shins wobble. If you see those we should work together to fix these.
If your video allows, try and catch a freeze frame/slow motion of the moment your foot makes contact with the ground. We can analyze that together.

Heel Strike:
• For an a lot of runners a heel strike is most common, sometimes that's because many people's hips are too tight from lifestyles that encourage a ton of sitting. (like a student in school, which is why we do hurdle mobility). If this is working for you, this is fine, if you experience injuries we need to work on strength and move you to a mid foot strike.
• If a person is a heavy heel striker, a lot of times your stride angle is too big.
• One way to help train that transition is to run on the treadmill up really close to the computer screen on the treadmill, so you can't reach out to heel strike. You're then forced to have a quicker cadence and push backwards and your only option is mid foot. This is called "constrained" training, and at first feels very awkward but you will learn to pull the treadmill behind you (pulling the ground away) and to keep your knees back behind you which engages the larger glute muscles for greater propulsion.

Forefoot Strike:
• Forefoot (ball of the foot) strike is efficient when starting or finishing a race but is a lot of impact on the ankles and doesn't give as much return. But again if this is working for you and you aren't experiencing injuries, there is no reason to change it
• If you're a heavy forefoot striker, your stride angle could be too small or too large, or worse, it could vary with every step.

Midfoot Strike:
• If you land at that 90-degree foot angle, then you get to use your ankle, your knee joint, and the hip joint all at the same time to both absorb shock and then create energy.
• This is foot strike is most commonly associated with less injuries and more economical running form but is not ideal for everyone's body type.

Stride Rate:
• An increase in stride rate (cadence) can lead to a decrease in the tension and forces on the knee and, in turn, a decrease in knee pain. The reason a higher stride rate can reduce injury is because it decreases the amount of time the foot hangs in the air and changes the angle at which it lands.
• The longer the foot is in the air the harder it hits the ground.
• The second reason a higher stride rate can be ideal is related to that push-off. The force from your push-off from the ground is what propels you forward. Spending too much time in the air decreases the amount of force pushing you forward. Spending too much time on the ground with each step means you're, well, stuck on the ground and not running forward. A high turnover pushes a runner forward quickly and strongly.
• "You want to just roll over the ground," said Daniels. (Jack Daniels)

• Compared to changing your stride length, increasing your stride rate is relatively straight-forward. A person's stride length can vary depending on their height, hip mobility, and general fitness.
• It takes more energy to run with larger steps, which is why Fitter athletes tends to have slightly longer strides. It also requires hip mobility, flexibility, and glute engagement to pull your leg back behind you.

Hills:
On an uphill, you 'll want to lift your hip bones forward to give yourself more power and help you avoid hunching over. Shortening your stride and running more on your toes will also help make it feel easier. Lifting your knees higher and pumping your arms a little bit more will make it so your legs aren't doing all the work .
• Set your gaze six to 10 -20 eet ahead. It helps make things seem flatter instead of a daunting hill.

- Down hill-don't break, it puts pressures on your knees." "Nose over toes' 'and still lean from thehips forward slightly to your comfort level.
- Common mistake: Backing off as soon as you reach the top of a hill. “Continue your forward momentum once you crest the hill,” says Harrison
- Focus on driving your knee off the hill, not into the hill like you might do if you maintained your normal knee drive. Work on landing on the ball of your foot to spring up the hill.
- Plantar flex (point your toes towards the ground) at the ankle. Think of yourself exploding off your ankle and using that last bit of power to propel you up the hill with minimal energy expenditure. (https://runnersconnect.net/how-to-run-hills/)

Running on a curve:
More geared towards track season when you look at your curve videos you can look for these details - (https://trackandfieldtoolbox.net/sprints/running-the-curve)

1. Do Not Touch the Line – stay 3-4 inches from the line.
2. The shoulders should stay square. The head, ears, neck and eyes should stay in line just like on the straight away
3. The left elbow is taken back slightly inside and with a shorter arc than the right arm
4. The right arm comes forward with force and slightly across the midline and under the chin. The elbow is driven straight back and the arc is longer than the left arm.
5. Do not lean. Keep shoulders square
6. Transition smoothly into straight away.
Link:https://youtu.be/X2eW-e7KIlU

Conclusion: Essentially, with focus on technique and supplementing your running with core workouts, plyometrics, cross training and weight training you can improve your form. This will give you increased running efficiency, economy and speed.

Sources:

Runners World -

- https://www.runnersworld.com/beginner/a20811257/proper-running-form-0/
- https://www.runnersworld.com/training/a20856463/how-to-run-hills-1/

Daniels' Running Formula - Dec. 20 2013 - Jack Daniels

Training Young Distance Runners – Dec. 30, 2014 - Larry Greene

Track and Field Tool Box - https://trackandfieldtoolbox.net/sprints/running-the-curve

Road Runners Sports - https://www.roadrunnersports.com/blog/proper-running-form/