13 tips to extend the lifespan of your phone battery

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It’s harder to replace your phone’s lithium ion battery than it is to treat it right in the first place. Many smartphones don’t provide easy user access to their batteries. That includes all iPhones and many flagship Android phones from brands such as Samsung. Official battery replacements are often expensive and inconvenient. There are also environmental concerns. Smartphones are, frankly, an environmental disaster and extending the lifespan of your phone battery helps mitigate that.

Here are some things you can do to preserve and extend the lifespan of your phone battery. By battery lifespan I mean how many years and months your battery will last before it needs to be replaced. In contrast, battery life refers to how many hours or days your phone will last on a single charge.

1. Understand how your phone battery degrades.

With every charge cycle your phone battery degrades slightly. A charge cycle is a full discharge and charge of the battery, from 0% to 100%. Partial charges count as a fraction of a cycle. Charging your phone from 50% to 100%, for example, would be half a charge cycle. Do that twice and it’s a full charge cycle. Some phone owners use more than a full charge cycle a day, others use less. It depends on how much you use your phone and what you do with it.

Battery manufacturers say that after about 400 cycles a phone battery’s capacity will degrade by 20%. It will only be able to store 80% of the energy it did originally and will continue to degrade with additional charge cycles. The reality, however, is that phone batteries probably degrade faster than that. One online site claims some phones reach that 20% degradation point after only 100 charge cycles. And just to be clear, the phone battery doesn’t stop degrading after 400 cycles. That 400 cycles / 20% figure is to give you an idea of the rate of decay.

If you can slow down those charge cycles — if you can extend the everyday battery life of your phone — you can extend its battery lifespan also. Basically, the less you drain and charge the battery, the longer the battery will last. The problem is, you bought your phone to use it. You have to balance saving battery life and lifespan with utility, using your phone how and when you want it. Some of my suggestions below may not work for you. On the other hand, there may be things that you can implement fairly easily that don’t cramp your style.

There are two general types of suggestions here. There are suggestions to reduce stress and strain to your battery, affecting battery lifespan directly. Avoiding extremes of heat and cold would be an example of this first type. There are also suggestions to make your phone more energy efficient, slowing battery degradation by slowing down those charge cycles. Reducing screen brightness would be an example of this second type of suggestion.

2. Avoid extremes of heat and cold.

If your phone gets very hot or cold it can strain the battery and shorten its lifespan. Leaving it in your car would probably be the worst culprit, if it’s hot and sunny outside or below freezing in winter.

3. Avoid fast charging.

Charging your phone quickly stresses the battery. Unless you really need it, avoid using fast charging.

In fact, the slower you charge your battery the better, so if you don’t mind slow charging overnight, go for it. Charging your phone from your computer as well as certain smart plugs can limit the current going into your phone, slowing its charge rate. Some external battery packs might slow the speed of charging, but I’m not sure about that.

4. Avoid draining your phone battery all the way to 0% or charging it all the way to 100% — keep it between 20% and 80

Older types of rechargeable batteries had ‘battery memory’. If you didn’t charge them to full and discharge them to zero battery they ‘remembered’ and reduced their useful range. It was better for their lifespan if you always drained and charged the battery completely.

Newer phone batteries work in a different way. It stresses the battery to drain it completely or charge it completely. Phone batteries are happiest if you keep them above 20% capacity and below 80%. To be extremely precise, they’re happiest around 50% capacity

Short charges are probably fine, by the way, so if you’re the sort of person that finds yourself frequently topping up your phone for quick charges, that’s fine for your battery.

There are Android apps such as AccuBattery that can help you keep the battery level within that range, by sending a notification when the battery level hits the desired level. On my old Galaxy S7 I set the notification to trigger when the battery reaches 85%.

On iPhone (as of iOS 13) there is a feature on iPhone called Optimized Battery Charging, which will delay charging past 80% in certain situations. The setting uses a predictive algorithm, based on typical usage patterns, to determine if it thinks the phone is going to be plugged in for a long period of time.

Consider the following usage pattern. You typically plug your phone in when you go to bed at 10:00 pm. At around midnight, the phone hits 100% battery. At 6:00am you wake up and unplug the phone. In this case, the phone will be sitting at an unhealthy battery level of 100% for 6 hours. In the case of this example usage pattern, Optimized Battery Charging might hold the phone charge at 80% until 5:00am and then start charging to 100% just before your expected wakeup time of 6:00am. Unless this setting inconveniences you, turning it on should extend the lifespan of your phone battery.

To find the Optimized Batter Charging setting etting on an iPhone, navigate to Settings > Battery > Battery Health > Optimized Battery Charging

5. Charge your phone to 50% for long-term storage

The healthiest charge for a lithium ion battery seems to be about 50%. If you are going to store your phone for an extended period, charge it to 50% before turning it off and storing it. This is easier on the battery than charging it to 100% or letting it drain to 0% before storage.

The battery, by the way, continues to degrade and discharge if the phone is turned off and not being used at all. This generation of batteries was designed to be used. If you think of it, turn the phone on every several months and top the battery up to 50%.

Extending battery life

The tips above address battery lifespan directly. Battery lifespan is also affected by battery life, how long your phone lasts on a single charge. Improving battery life extends the lifespan of the battery by slowing down those charge cycles.

6. Turn down the screen brightness.

A smartphone’s screen is the component that typically uses the most battery. Turning down the screen brightness will save energy. Using Auto Brightness probably saves battery for most people by automatically reducing screen brightness when there’s less light, although it does involve more work for the light sensor.

The thing that would truly save the most battery in this area would be to manage it manually and fairly obsessively. That is, manually set it to the lowest visible level every time there’s a change in ambient lighting levels.

Both Android and iOS give you options to turn down overall screen brightness even if you’re also using auto-brightness.

7. Reduce the screen timeout (auto-lock)

If you leave your screen on without using it, it will automatically turn off after a period of time, usually one or two minutes. You can save energy by reducing the Screen Timeout time (called Auto-Lock on iPhones). By default, I believe iPhones set their Auto-Lock to 2 minutes, which might be more than you need. You may be fine with 1 minute, or even 30 seconds. On the other hand, if you reduce auto-lock or screen timeout you may find your screen dimming too soon when you’re in the middle of reading a news story or recipe, so that’s a call you’ll need to make.

I use Tasker (an automation app) to change the screen timeout on my Galaxy S7 depending on what app I’m using. My default is a fairly short screen timeout of 35 seconds, but for apps where I am likely to be looking at the screen without using it, such as news and note-taking apps, I extend that timeout to over a minute.

8. Choose a dark theme.

My phone, the Galaxy S7, has an OLED screen. To display black it doesn’t block the backlight with a pixel like some iPhones and many other types of LCD screens. Instead, it doesn’t display anything at all. The pixels displaying black just don’t turn on. This makes the contrast between black and colour very sharp and beautiful. It also means that displaying black on the screen uses no energy, and darker colours use less energy than bright colours like white. Choosing a dark theme for your phone, if it has an OLED or AMOLED screen, can save energy. If your screen does not have an OLED screen — and this includes all iPhones before the iPhone X — a dark theme won’t make a difference .

9. Look for apps that waste battery.

Look through your battery settings for other apps that use a disproportionate amount of energy and delete, disable, or restrict permissions where possible. For apps you want to keep using, you can restrict permissions you don’t need. There are also ‘light’ versions of some popular apps that generally take up less space, use less data, and may use less power. Facebook Messenger Light is one example.

In general, though, the apps that use the most battery will be the apps you use the most, so deleting or reducing use may not be that practical for you.

10. Learn how to turn on your phone’s energy saving / low-power modes.

Your phone has one or more energy saving modes. These limit the performance of the CPU (and other features). Consider using them. You will get lower performance but better battery life. You might not mind the trade-off.

11. Manage radios

You can turn off radios you rarely use until you need them. If you never use NFC there’s no reason to keep it on. On the other hand, radios like GPS, Bluetooth, and NFC don’t really use a lot of energy in standby mode but only if they’re actually operating. Energy savings from micromanaging radios will probably be limited.

On thing to think about in terms of radios is that the weaker your cell or WiFi signal, the more power your phone needs to access that signal. To access cellular data or WiFi your phone needs both to receive and send information. If you’re not receiving a strong signal it means your phone needs to boost its own signal to reach that distant cell tower or WiFi router, using more energy.

If your bedroom has a strong cell signal but a weak WiFi signal, it may save you energy to use cellular data instead of WiFi. Similarly, if you have a strong WiFi signal but weak cell signal, it’s better to stick to WiFi.

If you’re out of range of cell service and WiFi, turn airplane mode on. Smartphones are always on the lookout for cell and WiFi signals if they don’t have them. If no signal is available, your phone will constantly be looking for one.