

How to Save any screen, to review the screen image now or later

<i>Device Type</i>	<i>Keyboard keys OR button combo</i>	<i>Screen image file is stored in folder</i>
Windows	Win+PRTSCR	Pictures/Screenshots
Macintosh	Shift+Command+3	Desktop
Android	Power+Volume Up	Internal storage/ DCIM/Screenshots
iOS	Home+Volume Down or Power+Volume Down	Photos

SMART WATCHES AND HARD FALL REPORTING

A Learn in 30 presentation
by John Krout
For PATACS+OPCUG
September 21, 2024

AGENDA

- What is a hard fall?
- How does a watch detect a hard fall?
- My first few false hard fall reports
- What the Web reveals about hard fall reports by Apple and Samsung smart watches
- Ways to prevent hard fall detection while sleeping

A Smart Watch is closely coupled to your Smartphone

- The two communicate via Bluetooth
- An app on the smartphone manages many aspects of smart watch behavior
- Like a smartphone, a smart watch uses lithium-ion batteries and have the same risks of battery damage during charging.
- The watch battery is smaller so the battery damage risk is greater.

Hard Falls are a Cultural Meme

- Years ago, before cell phones existed, a TV ad campaign made this phrase very familiar:

I've fallen and I can't get up!

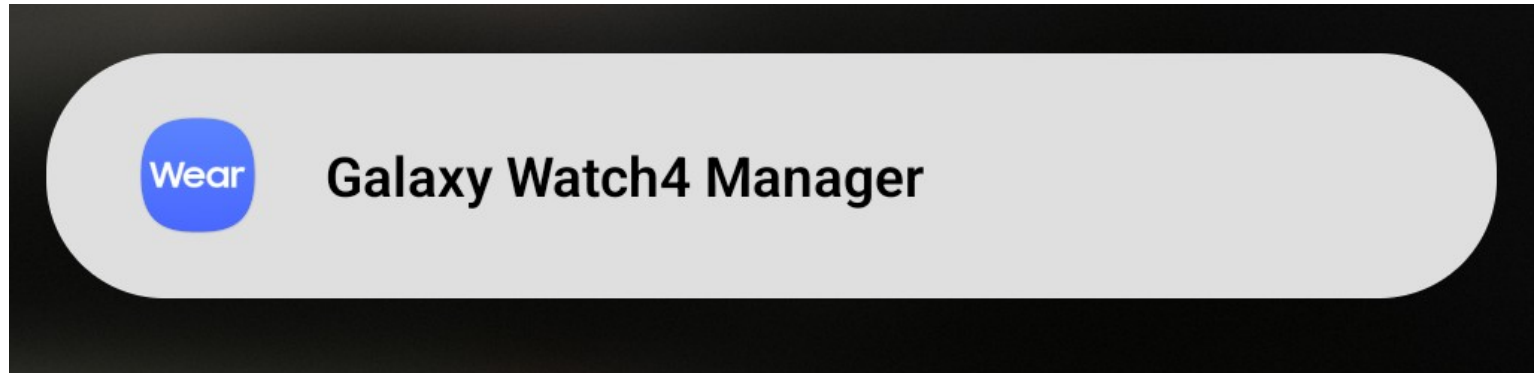
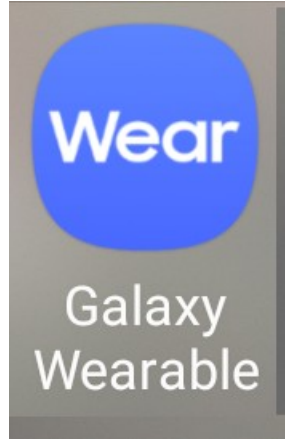
- Today, major brands of smart watches offer hard fall detection as an option.
- The combo of a smart watch and a smartphone app for managing the smart watch also allows a detected Hard Fall to trigger the smartphone to dial 911.
- A Hard Fall also triggers the smartphone to send text to emergency contacts listed in your Contacts.

My smart watch history

- On Black Friday 2023, the refurb Samsung Galaxy Watch 4 fell to a price sweet spot. I ordered the watch that day.
- It arrived on Saturday.
- In the box: the watch, plastic watch bands, and a tiny USB inductive charger disk.
- I ordered screen protectors, and later ordered a stretchable watch band that I have used ever since.

The Galaxy Wearable app

- This app has a interesting dual personality.
- The app in my smartphone shows the icon with the name Galaxy Wearable.
- When I run the app, and look at the list of all apps, this alternative name appears:



My smart watch history

- Less than a month after I obtained the smart watch, shortly before 7 AM on December 20, 2023, I was awakened an unfamiliar, somewhat ominous sound and a long vibration, both from my smart watch.
- The watch screen told me that my **hard fall had been detected** and 911 was called.
- No I had not fallen out of bed. Apparently I had moved my arm suddenly in my sleep.
- The watch used my phone to contact 911 in Arlington. I knew what to expect, since my smartphone had pocket-dialed 911 a few months earlier.

My smart watch history

- Arlington Emergency Services sent me a text asking if there was a real emergency. I sent a response text to Arlington saying that I had no emergency.
- My daughter, a registered nurse, is my emergency contact. The watch sent her a text also. She sent me a text, and I told her that I had no emergency.
- The watch continued to send a text every hour to my daughter. I eventually realized that, every hour, the smart watch was asking if I wanted to **stop Emergency Sharing**, but that request was not visible because the watch was under a sweatshirt sleeve.

My smart watch history

- At about 10 AM, I responded to the watch question, saying I did want to stop Emergency Sharing. That ended the hourly texts to my daughter.
- Until that unwelcome experience on December 20, I had no idea hard fall detection was enabled on the smart watch.
- I started researching two issues:
- How accurate is hard fall detection?
- What can I do to minimize sleep interruptions?
- Today you will find out what I learned.

False Positives and False Negatives


- These are generic terms used to described automatic detections that are ***not accurate***.
- On December 20, I experienced a **False Positive**.
- A False Positive happened to me again at 4:16 AM on February 2, 2024. I was not so thoroughly asleep at the time. I looked at the watch. It asked if I needed help. I answered No. It asked if I had really fallen. I answered No. It said it would report the false alarm to Samsung. Maybe it included captured smart watch logs for that report.
- By my own standard, a False Negative is much more important in hard fall reporting.

False Positives and False Negatives

- Any system involving real-world detections will not be perfect, but will definitely try to minimize both False Negatives and False Positives.
- My online research found that both Samsung smart watches and Apple smart watches have less than a sterling reputation for hard fall detection, with significant False Positives and False Negatives.
- Bad news travels fast on the Internet. There may be a large majority of satisfied users of hard fall detection and reporting. Some users might have turned it off.

Informing Samsung manually of False Positives and Negatives

- Samsung posts instructions on its Wearables Forum site for reporting these issues.
- Note the date.
- <https://r1.community.samsung.com/t5/wearables/false-claim-of-fall-detection/td-p/15940394>


 **MOD SamsungLaura** Moderator OPTIONS

07-29-2022 10:36 AM in [Wearables](#)

Hi @LeoneM, I am sorry to hear the feature is not working on your device. I suggest sending an error report for this to be looked into further.

To send an error report for a wearable, follow these steps:

1. Go to *Galaxy Wearables* app > click on the device desired on the side menu
2. In the side menu, tap *Contact us* > *Error reports* (in the *Get help* section)
3. Fill in details and the frequency of the issue that you have with the wearable.
4. Click send.

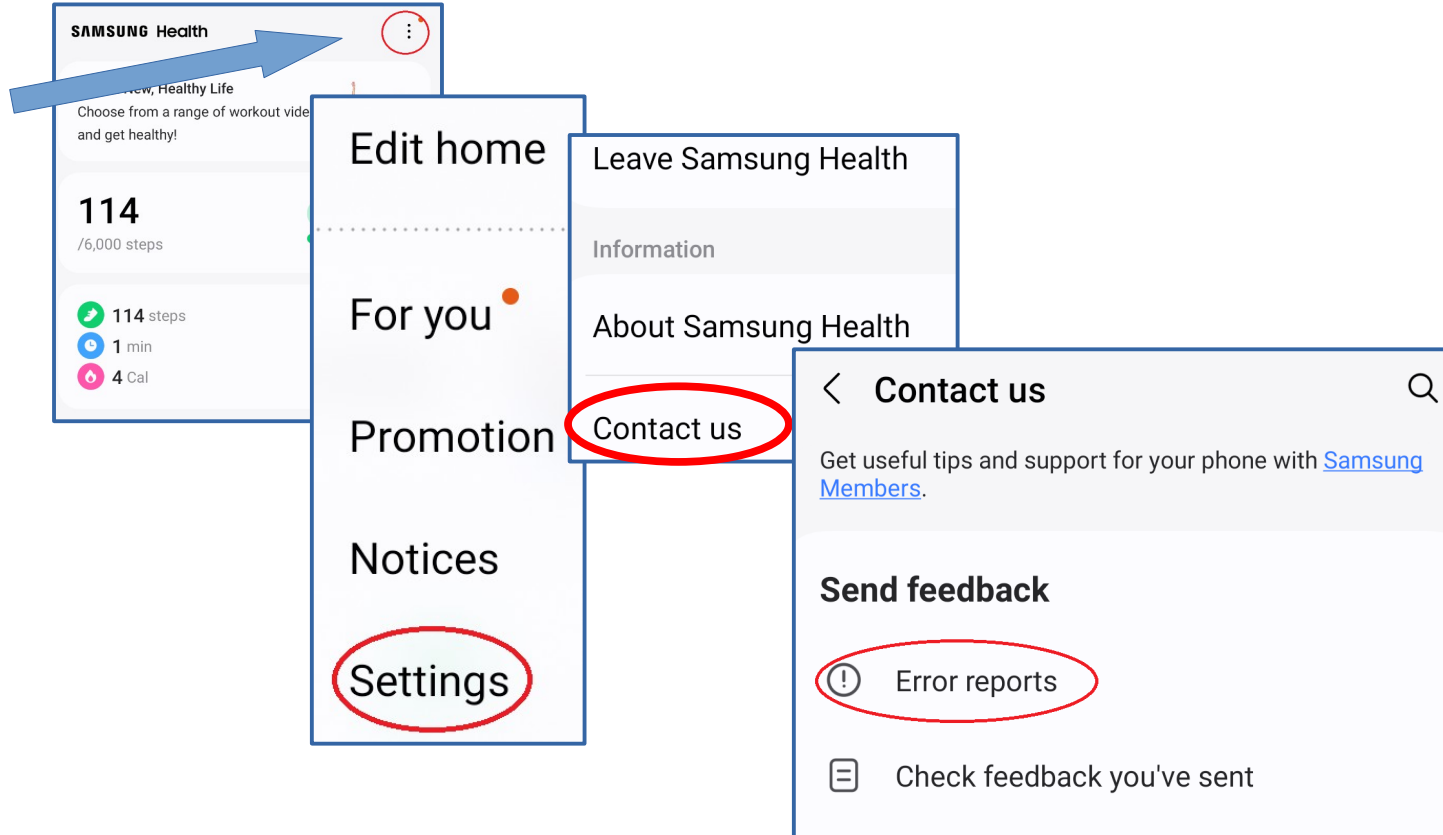
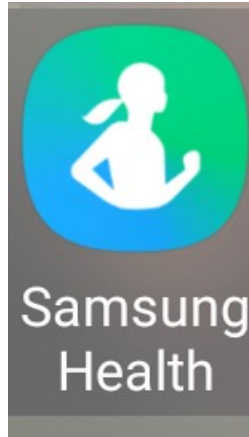
 0 Likes REPLY

Informing Samsung of False Positives and Negatives

- Less than six months after those instructions were posted online, when I first experienced a False Positive Hard Fall detection, I found the posted instructions were out of date.
- My Galaxy Wear app literally had no way to report an issue.
- I found a report link in another Samsung app, **Samsung Health**, which collects data from the smart watch and provides various views of the data. Since that app is obviously related to the smart watch, I tried complaining that way.

Where I found that feature in the Samsung Health app

- Main screen ▶
- Three dots ▶
- Settings ▶
- Contact Us ▶
- Error Reports



Response from Samsung

- It took me two days to find that Samsung Health Error Report feature.
- Samsung said the tech data I gathered from the watch on that day did not include any Hard Fall detection.
- They said to gather the data and ***send it within 3 to 5 minutes of a False Positive.***
- Difficult to accomplish that when awakened by a False Positive.
- Imagine trying to do that during a **False Negative**, while you are in pain, or while on the phone with 911.

False Negative Hard Fall detection report: you can opt out

- It happened again later in February. I was not so thoroughly asleep at the time.
- I looked at the watch. It asked if I needed help. I answered No.
- The watch asked if I had really fallen. I answered No.
- The watch said it would report the false alarm to Samsung. Maybe it included watch logs for that report.
- It happened again in March.

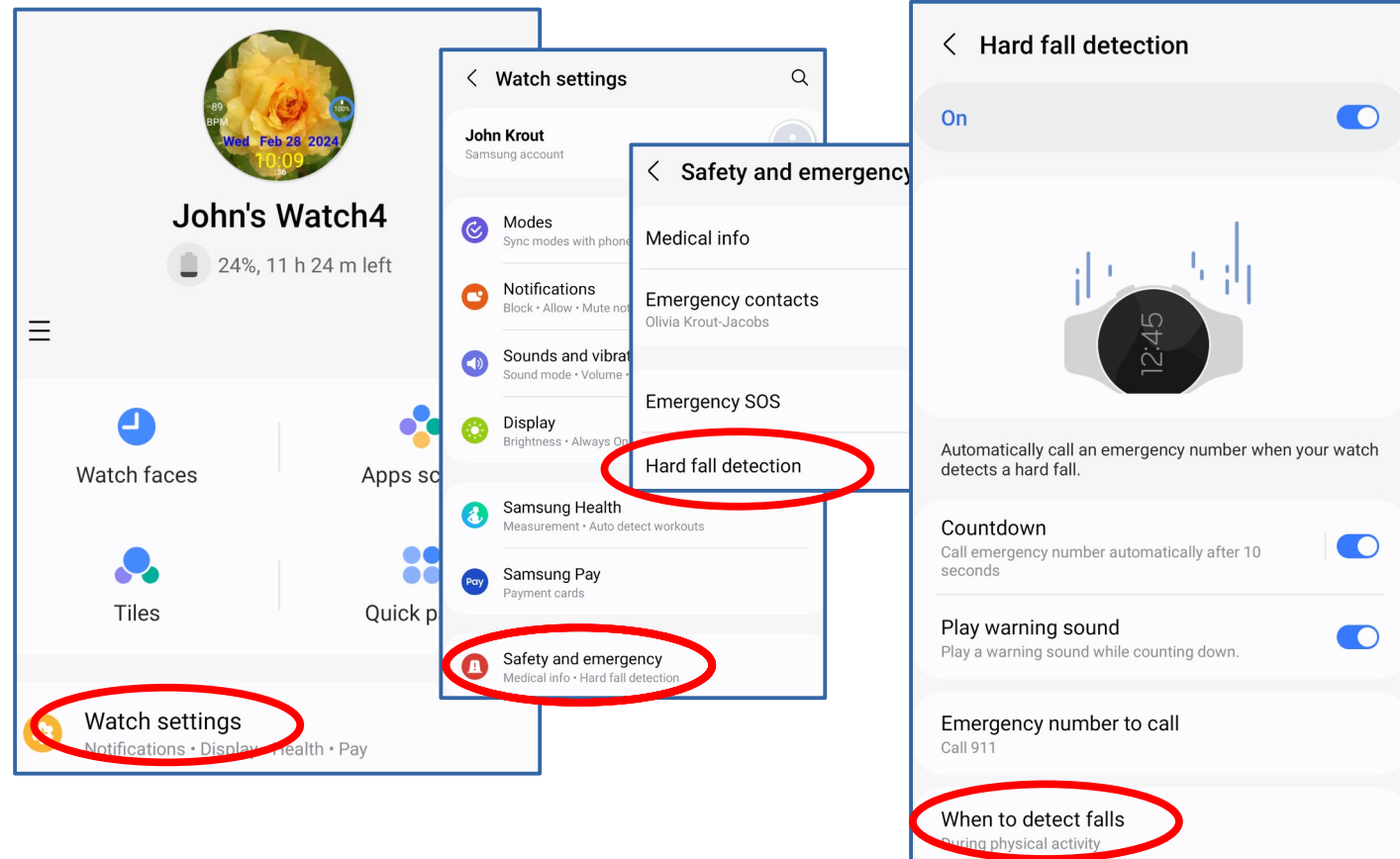
How to avoid False Positive Hard Fall reports while sleeping

Ways to avoid False Positives while sleeping

- I considered various ways to avoid that.
- **Take off the watch at night.**
- The next two are not entirely practical because you have to remember to undo them in the morning.
- **Disconnect Bluetooth** so the watch could not use my phone.
- **Turn off Hard Fall Detection** overnight using the Galaxy Wearable app.

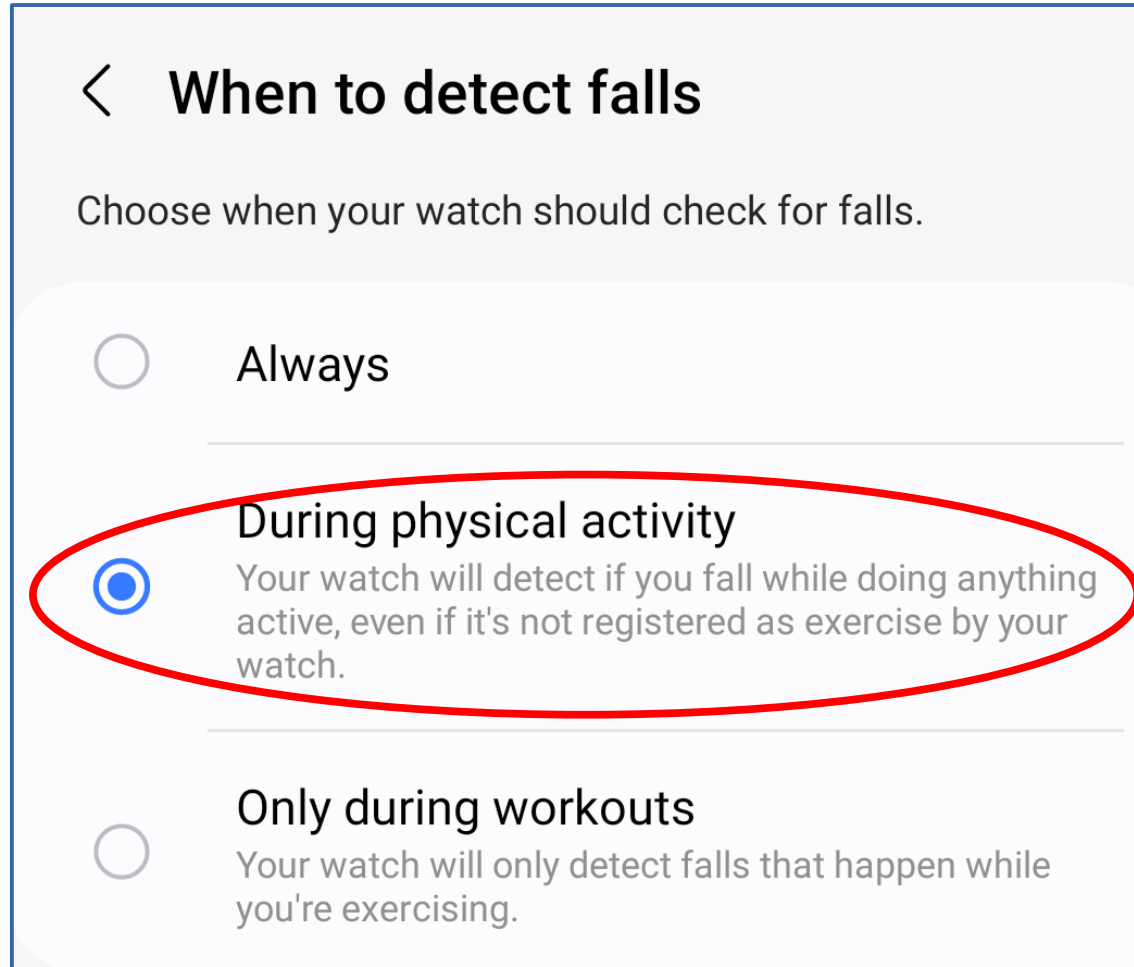
The Galaxy Wear app setting: When to Detect Falls

- How to find that setting:
- Main screen ►
Watch settings ►
Safety and Emergency ►
Hard fall detection ►
When to Detect Falls ►



When To Detect Falls screen

- The default setting is **Always**.
- I have had zero False Positives overnight since I set **During Physical Activity** in March 2024.



< When to detect falls

Choose when your watch should check for falls.

☐ Always

☒ During physical activity
Your watch will detect if you fall while doing anything active, even if it's not registered as exercise by your watch.

☐ Only during workouts
Your watch will only detect falls that happen while you're exercising.

What I like about Samsung Galaxy Watch 4

- Vivid colorful watch screen. Visible except in direct sunlight.
- Shows time, date and day of week
- Can show heartbeats per minute
- Can show current watch battery charge level
- Can show number of steps taken in the current day
- Design your own custom watch faces using free Samsung **WatchFaceStudio** software for Windows.

More on Hard Fall Detection

- The smart watch sensors that detect a hard fall have also been built into smartphones for more than a decade.
- I found a few apps on the Google Play Store that implement smartphone Hard Fall Detection. All were very low rated.
- I did not find any apps on the Apple App store.

Academic research on smartphone accelerometer accuracy

- National Library of Medicine reprint of December 2022 research report
- The report says that accuracy of Apple and Samsung smartphone accelerometers compared very well with accuracy of a standard lab accelerometer
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9824767/>



THE END