Different 5-10V battery sources wearable devices (Optional: charging mechanisms

1. V8 Rechargeable Lithium Battery for V8 Smart Watch :
    a. rechargeable lithium battery
    b. Battery for V8 smart watch
2. Texas Instruments BQ25616/616J Buck Battery Chargers:
    a. It senses the battery voltage and charges the battery in three phases that are pre-conditioning, constant current, and constant voltage.
    b. Adjustable charge voltage: 4.1V, 4.2V, and 4.35V
3. Texas Instruments BQ25886 Boost-Mode Battery Charger:
    a. This is a highly-integrated battery charge management and system PowerPath management IC.
    b. This system supports 4.3V to 6.2V input voltage range with a 20V absolute maximum input voltage rating.

Resources[1]

Look into boost/buck converters (might have to step down/step up voltages)

1. Buck- boost as pre regulator in wearable device
    a. Buck-boost regulator offers excellent efficiency for both low load and high load conditions and extending battery life
2. A Point-Of-Load Converter (Voltage regulator module) is a non-isolated buck converter that is capable of efficiently driving power to high current loads.

Resources[2]

Other DC to DC conversion techniques

1. Electronic Conversion - DC to DC converters in electronic circuits uses switching technology.

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[1] https://www.mouser.ca/Texas-Instruments/Semiconductors/Power-Management-ICs/Battery-Management/BQ25120-Series/Newest-Products/_/N-wnwk?P=1yomefnZ1z0zls6

[2] https://www.renesas.com/doc/whitepapers/switching-regulator/powering-wearables.pdf

https://www.allaboutcircuits.com/technical-articles/buck-converters-and-their-cool-applications/

2. Magnetic Conversion - In these DC-DC converters, the energy is periodically stored and released from a magnetic field in an inductor or a transformer in a frequency range of 300KHz to 10MHz.
3. Non-isolated Conversion - Non-isolated converters are used when the change in the voltage is small.
4. Isolated Conversion - These converters have a separation between input and output terminals. They have high isolation voltage properties. They can block the noise and interference.
5. Flyback Conversion - This converter works like the buck-boost converter of the non-isolating category. The difference is it uses a transformer to store energy instead of an inductor.
6. Forward Conversion - This converter will use the transformer to send the energy, between the input and output in a single step.

Resources[3]

[3] https://www.elprocus.com/different-types-dc-to-dc-converters/