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Allay

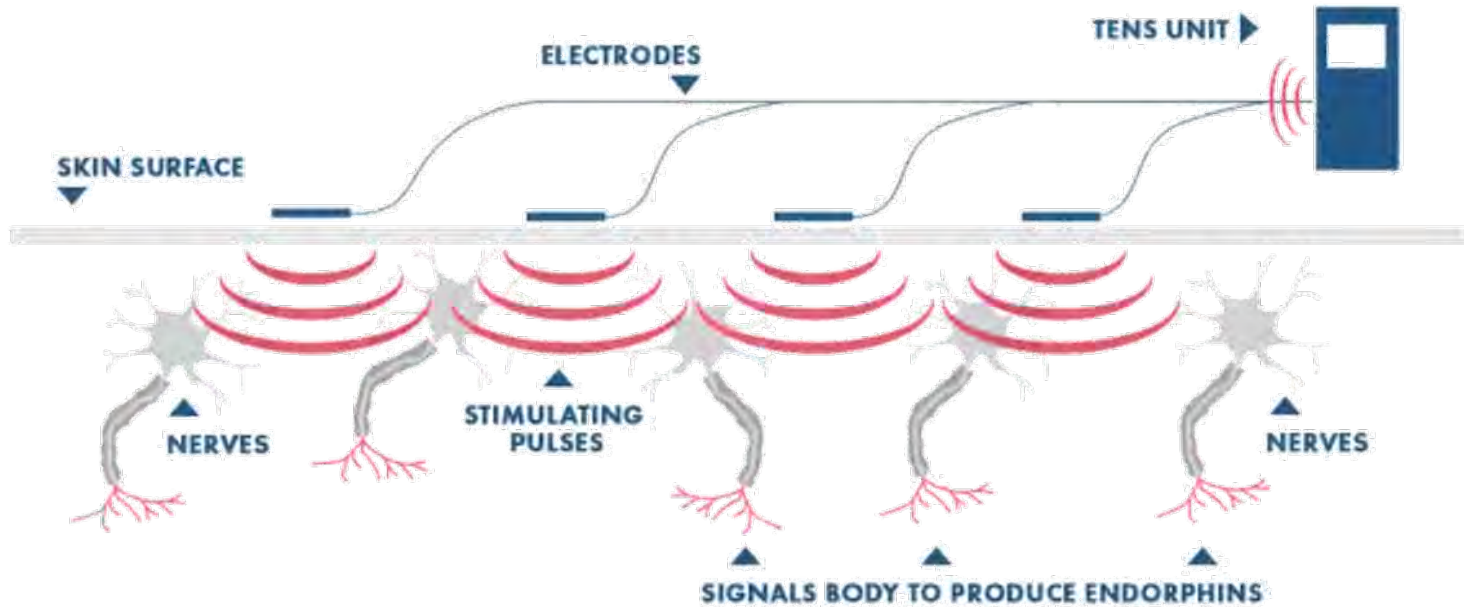
portable electrotherapy sleeve

An estimated 70 million adults in the US have either chronic pain or high-impact chronic pain caused by arthritis, fibromyalgia, cancer, and many more conditions. [1]



Transcutaneous Electrical Nerve Stimulation (TENS)

can reduce chronic pain symptoms. [2]



Current Products Are:

Not Portable



Bulky

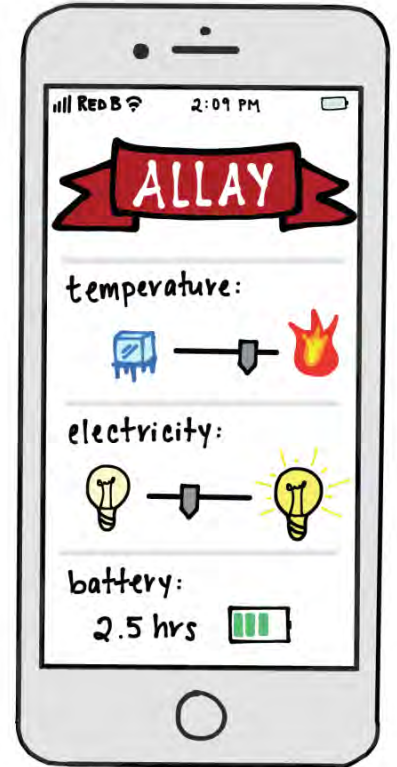
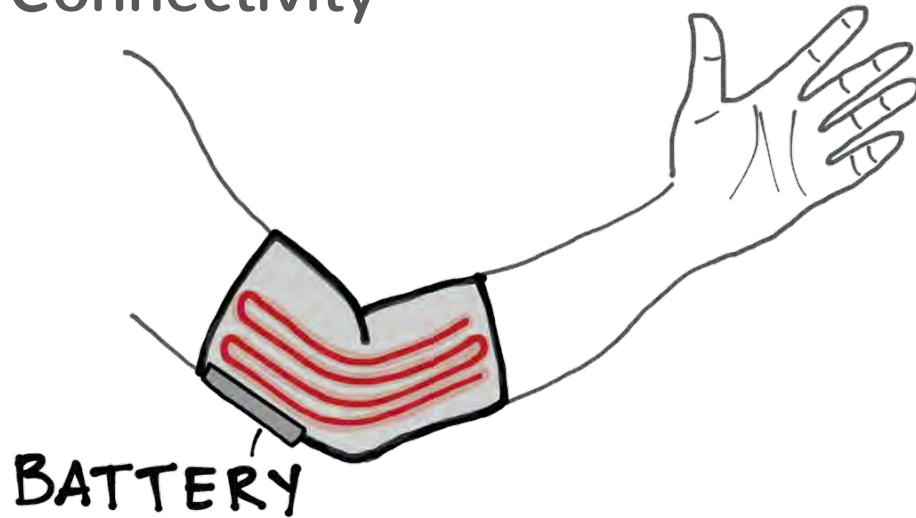


Expensive



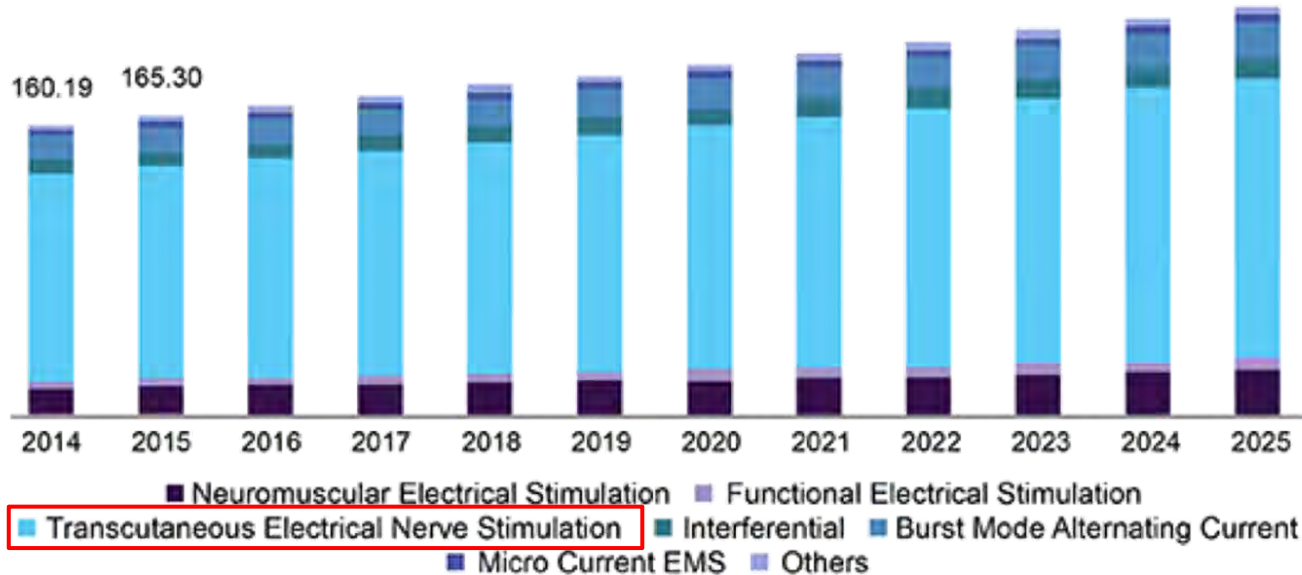
Allay Features:

- TENS & Heat Treatment
- Portable & Lightweight Design
- Bluetooth Connectivity



US Muscle Stimulator Market: 190 Million USD^[3]

U.S. muscle stimulator market size, by product, 2014 - 2025 (USD Million)



How much **power** is required to have TENS and heating components?

Can the power be stored in a **compact** way to fit on a sleeve?



Important Parameters

Frequency of Impulse

Duration of Impulse

Applied Current

Temperature

Voltage

Power Requirement

TENS: 2W

Heating: 3W

Total: 5W



Choosing the right battery:

	Size (cm) <i>w x L x t</i>	Weight (g)	Hours of Continuous Use
Battery 1	4.7 x 5.3 x 0.32	22	0.6
Battery 2	6.1 x 9.5 x 0.32	50	1.6
Battery 3	6.6 x 12.2 x 0.6	120	5

Battery 3 provided the most power in the most compact, comfortable way



Next Steps

- Choose conductive fabric for sleeve
- Integrate TENS & heating into sleeve
- Conduct user tests



Allay Sources

- [1] Cdc.gov. (2016). *Prevalence of Chronic Pain and High-Impact Chronic Pain Among Adults — United States*. [online] Available at: <https://www.cdc.gov/mmwr/volumes/67/wr/mm6736a2.htm> [Accessed 3 Oct. 2019].
- [2] Southwestspineandpain.com. (2015). *Transcutaneous Electrical Nerve Stimulation (TENS) for Chronic Pain*. [online] Available at: <https://www.southwestspineandpain.com/blog/transcutaneous-electrical-nerve-stimulation-tens-chronic-pain> [Accessed 3 Oct. 2019].
- [3] Grandviewresearch.com. (2018). *Muscle Stimulator Market Size, Share & Trends Analysis Report By Product (NMES, FES, TENS, IF, BMAC, MENS), By Modality (Portable Devices, Table Top Devices), By Application, By End Use, And Segment Forecasts, 2018 - 2025*. [online] Available at: <https://www.grandviewresearch.com/industry-analysis/muscle-stimulator-market> [Accessed 3 Oct. 2019].

