

Appendix B: Competitive Benchmarking Research Summary

To better understand the market landscape for self-defense tools, we conducted a competitive benchmarking of several existing products referenced by users in our safety survey. Our objective was to examine current solutions regarding effectiveness, portability, ease of use, and psychological reassurance. This focuses on commonly available personal safety tools such as pepper sprays, pocket knives, tasers, and self-defense jewelry, with a particular emphasis on products that align with user concerns regarding portability, legal accessibility, and comfort in usage.

This summary distills key product insights and implications that will guide our design strategy to create an innovative, inclusive, and emotionally supportive self-defense solution.

SABRE Pepper Spray Keychain



Figure 5: SABRE Pepper Spray Keychain

This product is one of the most widely carried personal defense items. It fits on a keychain and can be used from a short distance to disable an attacker temporarily, offering a high deterrent factor while remaining compact and portable. While many models, like the SABRE, are legal to carry in most U.S. states, legal restrictions vary by location, including on college campuses and during international travel, which can deter consistent use.

This product has 4.8 out of 5 stars with over 400 reviews and costs just \$11.99, making it an extremely solid solution for self-defense. Again, the primary concerns highlighted by our survey are its accessibility, the possibility of it misfiring/breaking, and how habitual it is to bring.

Defender Ring

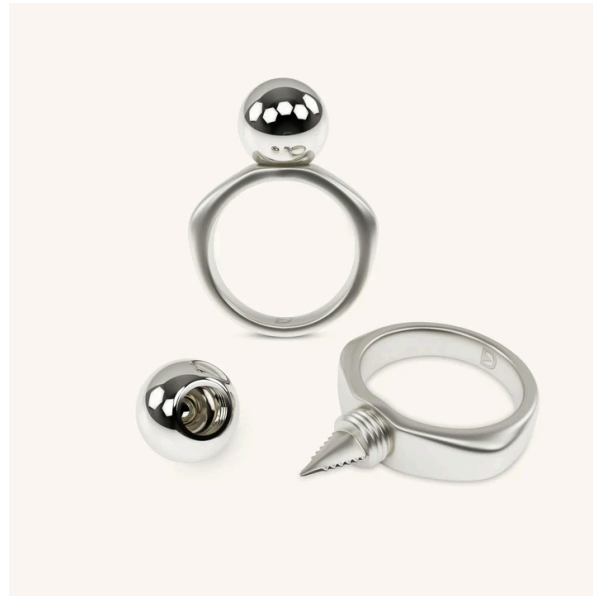


Figure 6: Defender Ring

The Defender Ring is a functional piece of jewelry designed to discreetly incorporate a sharp defense blade into a fashionable ring. It complements everyday wear and offers a low-profile self-defense option that does not necessarily appear threatening at first sight. Its greatest advantage is wearability: users do not need to remember to carry it or worry about accessibility, as it is always there. The blade can be unscrewed or flipped out in emergency situations, serving as a potential deterrent or means of escape. Its effectiveness in real confrontation situations is limited by the wearer's proximity to the attacker, agility, and reluctance under high-stress conditions.

While there are no specific ratings on the Defender Ring site (which contains other models as well), the comments given in our survey have furthered the previous analysis, stating that the confidence boost is nice, but the actual effectiveness for the average person is questionable. The Defender Rings are also quite expensive, ranging from \$59 to \$149, making it quite an expensive solution that maintains aesthetics.

Kubotan Keychain



Figure 7: Kubotan Keychains

The Kubotan Keychain is a small, cylindrical, stiff rod commonly constructed of plastic or metal and attached to a keyring to be used in close-up self-defense. It can be applied to push pressure points or punch, especially if held in a fist. It is popular due to its legality ambiguity—it's commonly sold as a keychain tool rather than a weapon—and its convenience and low cost. It is appealing to customers who want a low-key but perhaps effective physical defense solution. It does have some disadvantages, however. First, it requires training or at least experience to effectively employ, especially in high-pressure situations. Second, its low-key appearance can still be incorrectly assumed to be a weapon in context, leading to confiscation or banning in secure facilities such as airports or schools. Further, it also assumes a physical interaction, which may not be appealing or convenient to most users.

These devices are also very cheap (ranging from \$6-12) and receive high reviews and praise from those who have the capabilities to effectively use them.

25,000,000 Stun Pen



Figure 8: 25,000,000 Stun Pen

The 25,000,000 Stun Pen is a compact personal safety device that delivers a high-voltage electrical shock upon contact. Designed to resemble a pen or flashlight, the unit is intended to be inconspicuous and deliver instant protection in close-quarters attacks. The psychological deterrence is great; the visible arcing and the sound of the electrical discharge are often enough to scare off an assailant. However, the product still carries numerous disadvantages. It may be illegal or prohibited in many cities, states, or on campuses, a factor that many in the survey have marked as important. Similar to the pepper spray, people worry that this, along with other electric devices, could misfire, resulting in self-harm.

Sitting at the price of \$22.95 and with other electric devices costing upwards of \$60, the impact and effectiveness of this form of self-defense comes with a cost.

Final Summary

Across all categories, the user responses in our survey expressed a consistent desire for self-defense tools that are:

- Portable and habitual: Must be easy to carry and part of a daily routine (like keys, IDs, or accessories).
- Emotionally supportive: Should reduce anxiety without escalating fear or danger.
- Legally and socially acceptable: Avoid overtly “weapon-like” features that restrict usage in public spaces.
- Accessible and inclusive: Affordable, easy to use without training, and non-intimidating across age and gender.

Unlike the benchmarks in this section, our product should position itself not just as a defense mechanism but as a blend of subtle functionality, psychological empowerment, and inclusive

design. This informs our next steps in meeting the needs of our users while still striving for an affordable and comfortable design.