Have you ever considered why a pickle jar is the way that it is? Ergonomic considerations would most likely dictate a different format and configuration than the large, difficult-to-handle glass jar. It's heavy, breakable and often impossible to open by hand. The overly large low-profile metal lid is difficult to grip and is held tightly under vacuum pressure from the hot filling of pickles during packing. It's an ergonomic nightmare resulting in all sorts of compensating gadgets to overcome the difficulty of first-time opening.

Unfortunately, pickles don't care about ergonomics. Their size and shape dictate the size of the container they will be packed in, and the packaging itself must serve multiple purposes beyond fitting into the hand or providing ease of access to the product inside. You see, human factors is only one of the many factors to consider when designing handheld packaging, and the demands and limitations of packaging inherently dictate that not all factors influencing the design will be treated equally. It may not be feasible for all the factors to achieve perfection in the eyes of the consumer or the realities of their wallet. Instead, the more likely solution may be a practical compromise that results from factoring in what is most important for the product.

Considering Human Factors in Package Design
Design principles for handheld packaging should always include human factors considerations. Within the realm of feasibility, we need to ensure that packaging is intuitive—that it clearly communicates to the user how to interact with it and access the product inside. We, as designers, need to consider the grip of the package: How will the user lift or hold the package? How will it be accessed on the shelf and transported to the point of use? Is it a suitable size and shape to fit the human hand? Have we properly contoured surfaces to be comfortable to touch and hold? We also need to consider the force that is associated with interacting with the package: Is the opening force required appropriate for the target audience? How heavy is the pack to lift and to hold? Is the package meant for interaction in close proximity.
to the body or further away? And we need to consider what range of motion interacting with the package requires: Are we putting limbs or digits in uncomfortable positions or creating an overly taxing static load? Does the overall size and configuration of the pack allow for comfortable interaction?

**Factors Beyond Human Factors**

Human factors considerations aside, handheld packaging also needs to serve a higher purpose. Packaging’s primary role is to contain, preserve and protect the product. This is especially true when we consider foods and other sensitive goods.

Most products must be contained before they can be effectively and efficiently moved from one place to another. The containment function of packaging makes a huge contribution to protecting the environment and reducing product waste. Defective packaging (or insufficient packaging) can lead to significant issues with both environmental and economic consequences. Packaging plays a vital role in protecting products as they go through the distribution system, traveling from the point of manufacturing to the consumer. Effective packaging is designed to ensure that the product reaches the consumer in good and safe condition. Packaging also serves as a brand ambassador, effectively aiding in the merchandising and advertising for the product. It communicates to the consumer the product’s function and purpose while providing additional details, including price, prescribed use and ingredients, among other things. A package must protect what it markets and market what it protects.

Packaging must also consider the environment and be designed with the understanding that its use is transient. Only a minimal amount of material must be utilized for packaging to serve its primary functions of containment, protection and delivery. The amount of material used must be balanced against the limited life of packaging, and considerations must also be given to the materials utilized for the packaging itself: where they come from; the environmental consequences of their extraction, creation and/or fabrication; and what happens to them on disposal. Unlike durable goods, packaging’s life is relatively short-lived, but the value it provides is significant.

We also need to be careful about taking environmental concerns too far, reaching the point where the consumer experience is compromised. Consider the light-weighted water bottle with its diminutive closure and its flimsy feel. The amount of material in the bottle has been reduced to the point where holding the bottle securely is difficult because of the minimal wall thickness. Grasping and opening the closure is challenging because of its reduced diameter and ultra-low profile. Not to mention that when you finally do hold the bottle, grip the closure and proceed to open it, the bottle collapses in your hand and inadvertently spills.

Package materials also play a role in the ability of packaging to be ergonomic. Packages that are fabricated from sheet goods (cartons, thermoforms, blisters, steel cans) tend to be somewhat more challenging to make ergonomic.
Bending or forming sheets of material creates structures with acceptable, but not great, ergonomics. On the other hand, packages that can be formed from materials that are reduced to their molten state prior to forming have the ability to take on more ergonomic shapes. Items such as bottles, jars, closures and other blow-molded or injection-molded parts have the benefit of being able to be transformed into shapes that are essentially independent of the original form of the material.

Fundamentally, packaging must do all that it does but do it in an economic manner. It must strike a balance between what the company can afford to produce for a reasonable and sustainable profit and what the consumer can afford to pay for the benefits that the package delivers. Packaging’s true role is the containment and delivery of a product. In the absence of a product, packaging would not exist, so it must not impose an unacceptable economic burden on the product to be consumed. It is in the sweet spot between these two opposing forces of profitability and affordability that packaging must effectively operate.

Design Guidelines for Handheld Packaging
So then how does this all translate to specific guidelines and design principles for handheld packaging? Some of the considerations are as follows:

- Use clear, overt clues in the packaging to indicate the method of handling, opening, removing and/or dispensing. Understand that the packaging itself must clearly communicate how the consumer should interact with it, and strive to provide the necessary visual and tactile clues to facilitate an intuitive engagement.
- For items with tabs or features that require lift or tear-to-open access (such as thermoformed clamshells, trays with film seals or pouches with tear away tops) provide a sufficiently large area for the fingers to grasp. Consider using a tab size of at least 0.5 inches to facilitate ease of opening. If possible, consider adding texture through the use of embossing or surface finishes to aid in the ease of opening by identifying the direction of pull (emboss to lift, deboss to pull down).
For items such as bottles, jars or cans that are inherently round in nature, consider adding a noncylindrical grip feature to aid in stabilizing the container while holding or opening. Consider the target audience for the product, and tailor the diameter of the grip portion of the container to meet their needs. In many cases, if you solve for the case with the most constraints or the most demanding requirements, or the users who have the most restrictive needs, you create a universal solution that all can use.

For items such as dispensing systems (pumps, trigger sprayers, etc.) where the consumer is required to actuate the system multiple times over the course of a usage session, minimize the force required to dispense the product from the system by providing sufficient leverage and finger purchase. Design the system to fit comfortably in a single hand, ensuring that contact surfaces are properly contoured, are free of any sharp edges and have no pinch points.

When designing packages with rotationally applied closure systems, ensure that the contact surfaces of the closures offer sufficient grip. Strive to refine the diameter of the opening to allow for appropriate dispensing of the product, and be consistent with the ergonomic requirements of the target consumer. When feasible, design closure systems to incorporate rapid-rise threads to minimize the action required to open the package and to resist overtightening on reclosing.

For large containers that are meant to be used over time, consider adding multiple grip points to facilitate lifting and transport in various orientations. There is often a different ergonomic requirement for different packaging actions. For example, a bottle may require a different handle location and configuration for carrying versus pouring.

When possible, consider having the package serve multiple functions beyond containment, such as becoming an implement or aiding in the delivery of the product. When Product Ventures developed the Duracell "Easy Tab" pack, we turned the air activation label on the battery into a handle to aid less dexterous consumers when inserting the batteries into their hearing aid.

In the end, design principles for handheld packaging must strive to appropriately factor in the myriad of packaging requirements. Product preservation and delivery, manufacturing realities, brand communication objectives, merchandising, user experience and environmental sustainability all need to be addressed. It’s a tall order for the package designer to effectively orchestrate. If we were to develop the pickle jar today, we might consider the human factors more thoughtfully and leverage a different package configuration that can provide a better consumer experience. Maybe it’s a pouch so that you can grip the pickle more easily and avoid the comical chase-the-pickle experience of today. There can always be a better solution if all factors are carefully considered.