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Everyday Thoughts

My Chatbot Has Arthritis

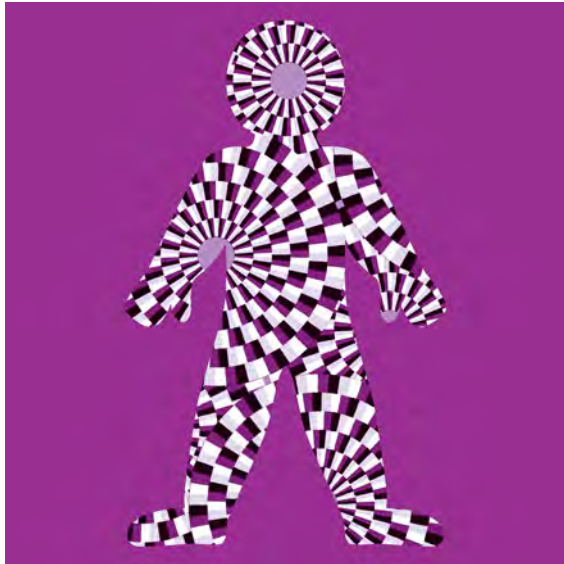
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My Chatbot Has Arthritis

Dan Formosa Ph.D.



What does AI know?

As a product designer heavily involved in research I have spoken to and observed hundreds of people in usability studies and interviews, covering a wide range of product categories. A goal for the products, including consumer products and medical devices, among other usability challenges people may have, are designs appropriate for people who have arthritis.

Like many people, over the last year or so I have logged onto ChatGPT and Google Gemini for information, asking questions related to either professional or personal projects. Most were short Google-like question and answer sessions.

My assignment as editor for this issue of *Design For All* was to enlist a number of authors. For their articles the authors reached out to various people for interviews. For this article I thought I would try an experiment. I reached out to a chatbot,

Google Gemini, to see what AI can offer in an interview. Not just a quick information search, my plan was to carry on an extended conversation. In experimental fashion I started by asking if he/she/it (not sure of the proper pronoun for a chatbot) could respond as someone who has arthritis. I wasn't sure if this was possible, or what it would yield. Before anyone sends me an angry email message, by no means do I regard chatbots as an alternative to real people (I'm a real-people person.) And as you'll see, the chatbot agrees. However, in conversation I was surprised at how knowledgeable the chatbot was. And how chatty!

My expectations were moderately high to start. But the chat was more informative, and more fun, than I expected. I did not edit my prompts or any of Gemini's responses. Here's that session:

My conversation with Gemini

Gemini: Hello, Dan. How can I help you today?

Dan: Are you able to respond to questions as if you are someone with a disability such as arthritis?

Gemini: I can certainly try! To respond authentically, it would be helpful to know what type of arthritis and the severity. Arthritis affects people differently, but I can share some general responses that capture some of the challenges people with arthritis experience. For example, if you ask me "Can you open that jar for me?" I might respond with:

- “Ugh, my hands are feeling stiff today. Would you mind giving that a twist? My arthritis is acting up.”

Or, if you ask me “What do you like to do for exercise?” I might say:

- “I enjoy going for walks, but long distances can be tough on my knees. Low-impact activities are my friend these days.”

Let me know if you have a specific scenario or question in mind, and I will do my best to craft a response that reflects the experience of someone with arthritis.

It’s important to remember that everyone with arthritis is an individual, and their experiences will vary.

Dan: Arthritis is sometimes characterized into three levels – slight, moderate and severe. Can you respond as someone who has moderate arthritis?

Gemini: Absolutely! Having moderate arthritis can definitely make things interesting. For instance, if you ask me to come for a hike, I might say:

- “I’d love to join you, but those hills might be a bit much for my knees today. Maybe we could find a flatter trail? There’s this great path by the river I’ve been wanting to check out.”

Or, if you hand me something heavy, I might respond with:

- “Oh, thanks! Let me just grab that with two hands – my wrists aren’t too keen on carrying a lot these days.”

On good days, I might be able to keep up with most activities, but there will definitely be some adjustments I need to make to manage my pain and stiffness. I also tend to get tired faster, so pacing myself is important.

Is there anything else you’d like to know about what it’s like to have moderate arthritis?

Dan: What are some of the common challenges you experience on a day-to-day basis?

Gemini: With moderate arthritis, some days are definitely better than others. Here are a few challenges I face on a fairly regular basis:

- *Morning stiffness:* The first hour or so after waking up can be rough. My joints, especially in my hands and knees, feel like they’re filled with cement. Simple tasks like getting dressed or making breakfast can take a bit longer as I wait for things to loosen up.
- *Pain with activity:* I can still be active, but I have to be mindful of it. Walking is great, but those hills you mentioned? Yeah, they can definitely trigger some aches. I also have to be careful not to overdo it, or I’ll pay the price later with soreness and stiffness.
- *Surprise limitations:* There are times when I reach for something or go to do something and my body just says “nope.” Maybe a jar lid is too tight, or a curb seems higher than usual. It can be frustrating, but I’ve learned to have some backup plans and be flexible.
- *Fatigue:* Even on good days, I tend to tire out faster than people without arthritis. Planning activities often involves factoring in rest breaks. Sometimes, a simple trip to the grocery store can leave me needing to put my feet up for a while.
- *Impact on sleep:* Sometimes the pain or discomfort can make it hard to get a good night’s sleep. This lack of sleep can then make the next day’s challenges even tougher. Finding ways to relax and manage pain before bed is important.
- *Mental game:* Arthritis can be a bit of a mental battle. There are days when the pain or limitations can get me down. But I try to focus on what I can do, stay active, and not let it define me.

These are just some of the things I deal with on a day-to-day basis. The good news is that there are ways to manage arthritis, and I've found that a combination of medication, exercise, and a positive attitude goes a long way.

Dan: What about activities in the kitchen – cooking or preparing food, cleaning?

Gemini: The kitchen can definitely be a battleground for someone with moderate arthritis. Here's a glimpse into what it might be like for me:

- *Chopping and prepping:* Gripping a knife for long periods can aggravate my hand and wrist pain. I try to use tools with thicker handles for better leverage, and take breaks to avoid overdoing it. Sometimes, I enlist help from family members or pre-cut veggies to save my hands the stress.
- *Lifting heavy pots and pans:* Those hefty cast-iron skillet might look fancy, but they're not my friend. I've switched to lighter weight cookware made from aluminum or even silicone. Double-handled pots are a lifesaver, as they distribute the weight more evenly.
- *Reaching for things:* Those top shelves? Yeah, not happening most days. I've reorganized my cabinets to keep frequently used items within easy reach, at eye level or below. For higher shelves, I use a grabber tool to avoid that painful stretch.
- *Standing for long periods:* Kitchen duty often involves a lot of standing, which can be tough on my knees. I've invested in a comfy anti-fatigue mat to provide some cushion and reduce stress on my joints. Also, I pull up a stool to perch on while prepping or doing dishes whenever possible.
- *Cleaning:* Scrubbing greasy dishes can be a nightmare for sore hands. I wear

padded gloves for some protection, and try to use hot, soapy water to loosen grime so I don't have to scrub as hard. Anything with a non-stick surface is a godsend!

- *Planning is key:* Spontaneous cooking sessions are less frequent these days. I tend to plan meals in advance, considering what prep work I can manage without too much strain. Using slow cookers or one-pot meals are lifesavers on days when my arthritis is acting up.

It takes a little more creativity and planning to navigate the kitchen with arthritis, but there are ways to make it work. Sometimes, a little help from family or friends goes a long way too!

Dan: Are you having any trouble with specific items in the kitchen?

Gemini: Sure, with moderate arthritis, some kitchen items can cause more trouble than others. Here are a few that cause me problems:

- *Jar openers:* Those lids can be like torture chambers for my hands! Twisting them can be difficult and painful. I rely on jar openers with rubber grips or silicone pads to give me a better hold and more leverage.
- *Heavy can openers:* The squeezing motion can aggravate my hand and wrist pain. An electric can opener is a lifesaver and eliminates the need for gripping or twisting.
- *Peeling fruits and vegetables:* Gripping a small peeler can be tricky, and sometimes requires a lot of hand strength. I use peelers with large, soft handles for better leverage, or even silicone oven mitts for extra grip.
- *Small, lightweight cutlery:* These can be difficult to hold onto, especially with

stiff or sore hands. Utensils with thicker, ergonomic handles are much easier to manage.

- *Anything requiring a pinch grip:* Opening certain packages or handling small containers can be a challenge. I try to use scissors whenever possible to avoid pinching with my thumb and forefinger.

By using adaptive tools and making some substitutions, I can still get by in the kitchen. The key is to find what works for me and to not be afraid to ask for help when I need it.

Dan: What about pots and pans?

Gemini: Here are some challenges I face with pots and pans due to moderate arthritis:

- *Heavyweight cookware:* Cast iron skillets, Dutch ovens, even full stock pots of water can be heavy and cumbersome to lift, especially with sore wrists or hands. I've opted for lighter options whenever possible, like aluminum or even silicone cookware.
- *Unbalanced pots:* A pot with a single handle can put all the weight on one arm, which can be tough on my shoulders. Double-handled pots are a lifesaver, as they distribute the weight more evenly and make lifting and pouring easier.
- *Tight-fitting lids:* Heavy or cumbersome lids can be difficult to grip or remove, especially if my hands are stiff. I look for lids with large knobs that are easy to grasp, or even silicone lids that create a seal without needing to be pressed down hard.
- *High sides:* Peering over high pot sides to stir or check food can strain my neck, especially if I'm already dealing with pain. I tend to use wider, shallower pans whenever possible, or I use a grabber tool to stir or toss food without having to reach in too far.

- *Hot handles:* Grabbing a hot pot handle can be painful, especially if I have limited grip strength. I use silicone potholders that offer better heat protection and a secure grip. Some pans even have heat-resistant handles which is a big plus.

Dan: If a pinch grip is difficult, do you find that you are dropping things more frequently?

Gemini: Absolutely, having difficulty with a pinch grip is a major contributor to dropped items. Here's why:

- *Reduced control:* The pinch grip relies on the thumb and fingers working together precisely. With arthritis, stiffness, weakness, or pain can make that coordination challenging. My grip feels less secure, so things can easily slip out of my grasp.
- *Unexpected weakness:* Arthritis pain or stiffness can sometimes come on suddenly. I might be holding something and then experience a twinge that causes me to loosen my grip unintentionally, leading to a drop.
- *Everyday tasks:* Picking up a cup, grabbing a phone, even holding onto silverware all rely on a pinch grip. When that grip is compromised, even the most routine tasks can become precarious, and drops become more frequent.
- *Frustration and fatigue:* The constant struggle to maintain a good grip can be tiring and frustrating. This fatigue can sometimes lead to carelessness or moments of inattention, which can also contribute to dropped items.

It's definitely a challenge, and something I have to be constantly aware of. That's why I try to use tools that can help, like grippers for jars or silicone pads for utensils, to give me a better hold on things. I also take my time and focus on my grip when picking things up.

Even with these strategies, dropped items are still a reality of life with moderate arthritis. But it's important to stay positive and not let it discourage me. I just pick things up, dust myself off (metaphorically speaking!), and keep going.

Dan: What's your name and gender?

Gemini: I don't actually have a name or gender! As a large language model, I am not a person. I can respond to prompts and answer your questions in a way that simulates a person with a particular background or disability, but I don't have my own experiences or feelings.

Is there anything else you'd like to know about how arthritis might impact daily life?

Dan: Are you responding as a male or female, and does gender make a difference for common kitchen tasks?

Gemini: I apologize, attributing a gender to myself wasn't appropriate. You're right, gender itself likely doesn't cause a significant difference in the way people experience common kitchen tasks.

Social norms and cultural expectations might influence how often people perform certain tasks, but the physical limitations of moderate arthritis would apply regardless of gender.

Studies do suggest a slight difference in approach:

- *Gadget Use:* Some research suggests men might be more inclined to use specialized kitchen gadgets, while women may rely more on basic utensils.
- *Spice Preference:* There may be a difference in commonly used spices, with men favoring bolder flavors and women leaning towards everyday spices. However, these are generalizations, and the most significant factor impacting kitchen tasks with arthritis is likely individual preferences and cooking styles, not gender.

Dan: What about age?

Gemini: Age can definitely play a role in how arthritis affects someone in the kitchen. Here's how it might differ for someone younger versus someone older with moderate arthritis:

Younger (30s-50s):

- *Overall Strength and Endurance:* Younger individuals with arthritis might still have a bit more overall strength and stamina compared to older adults. This could allow them to manage tasks like lifting heavier pots or stirring for longer periods.

Work Adaptations: Younger people might still be actively working, and their jobs might influence their ability to handle kitchen tasks. A physically demanding job could exacerbate arthritis symptoms, making kitchen activities more challenging.

- *Activity Level:* Younger adults might generally have a higher baseline activity level, and this could translate to a better tolerance for some kitchen tasks despite arthritis. They might be able to push through stiffness or pain for a short period to get things done.

Older (60s+):

- *Joint Deterioration:* As we age, the natural wear and tear on joints can be more pronounced. This could mean more limitations in flexibility, range of motion, and overall strength, making even simple kitchen tasks more difficult.
- *Multiple Conditions:* Older adults are more likely to have other health conditions alongside arthritis. These can combine to create additional challenges in the kitchen. For instance, reduced eyesight might make chopping vegetables a safety hazard.

- *Reduced Recovery Time:* Recovery from exertion or pain might take longer for older adults. This could limit their ability to perform long stretches of kitchen work and necessitate more frequent breaks.

It's important to remember that these are just general trends. There will always be individual variations. A very active 65-year-old with well-managed arthritis might navigate the kitchen with more ease than a less active 40-year-old with severe symptoms.

Dan: My previous questions were about the kitchen, but are there other common tasks that may be difficult?

Gemini: Absolutely! Arthritis, especially moderate arthritis, can make a variety of everyday tasks more challenging. Here are some common areas where you might see difficulties:

Personal Care:

- *Dressing:* Reaching for buttons, zippers, or putting on socks can be difficult with stiff hands or sore shoulders. People with arthritis often look for clothes with easy-open closures like elastic waistbands or slip-on shoes.
- *Grooming:* Simple tasks like brushing hair, shaving, or applying makeup can be hindered by pain or limited range of motion in the hands and wrists. Tools with long handles or ergonomic grips can be helpful.
- *Bathing:* Getting in and out of the shower or tub can be risky, especially with slippery surfaces. Grab bars, shower seats, and hand-held shower heads can all improve safety and independence.

Daily Activities:

- *Housework:* Activities like vacuuming, sweeping, or mopping can be strenuous on joints, especially knees and hips. Using lighter weight tools or delegating chores can help.
- *Climbing stairs:* Stairs can be a major obstacle for people with arthritis in their knees or hips. Handrails are essential, and some people may need to consider installing a stairlift for their home.
- *Carrying groceries:* Lifting heavy bags can be a recipe for pain. Shopping carts or using grocery delivery services can be lifesavers.

Leisure Activities:

- *Gardening:* Tasks like digging, weeding, or pruning can be difficult with limited hand and wrist mobility. Raised garden beds and ergonomic tools can help make gardening more manageable.
- *Sports and exercise:* While staying active is important with arthritis, high-impact activities like running or jumping might be too harsh on joints. Low-impact exercises like swimming, walking, or yoga are often better options.

It's important to remember that these are just a few examples, and the specific difficulties will vary depending on the type and severity of arthritis, as well as the individual's overall health and lifestyle. However, with a little creativity and some adjustments, most people with arthritis can still find ways to manage these daily tasks and live fulfilling lives.

Dan: For dressing (buttons, zippers, etc.) have you found any products that can assist, or that are easier to use when dressing yourself?

Gemini: Yes, there are several products that can assist people with arthritis when dressing, especially with buttons and zippers. Here are a few of the most common:

- *Button hook:* A button hook is a small, handheld tool with a curved hook on one end. It helps you to loop the buttonhole over the button without having to use your fingers or pinch grip.



- *Dresser helper:* A dressing helper is a long, narrow tool with a hook on one end and a gripper on the other end. The hook can be used to pull up zippers and the gripper can be used to grab clothing and pull it on or off.



- *Reachers:* Reachers are long-grabbing tools that can be used to pick up clothing from the floor or to pull on socks and shoes. They come in a variety of lengths and styles.



- *Elastic shoelaces:* Elastic shoelaces can be used to replace regular shoelaces. They allow you to put on and take off shoes without having to tie or untie the laces.



- *Clothes with easy-open closures:* Look for clothes with features that make them easier to put on and take off, such as shirts with zipper closures or pants with elastic waistbands.

These are just a few examples, and the best products for you will depend on your specific needs and preferences. It is also a good idea to talk to your doctor or occupational therapist for recommendations.

Dan: Do you have any complaints or difficulties when using a smartphone?

Gemini: Absolutely! Using a smartphone with moderate arthritis can definitely be frustrating at times. Here are some of the common challenges I face:

- **Small screen and buttons:** Tiny icons and close-together buttons on the touchscreen can be difficult to see and target accurately, especially with stiff fingers. Pinching and zooming can be tiring and sometimes imprecise.
- **One-handed operation:** While many tasks can be done with one hand, some require swiping or pinching with both thumbs, which can be painful or difficult with limited dexterity.
- **Typing:** Swiping or tapping on the keyboard can be awkward and slow, especially if my fingers are swollen or stiff. Swype keyboards or voice recognition can be helpful alternatives, but they aren't perfect.
- **Weight and grip:** Smartphones can be surprisingly heavy, and holding them for extended periods can strain my hands and wrists. Cases with grippy textures or pop sockets can help improve my grip and reduce the risk of dropping the phone.
- **Stiffness and responsiveness:** The first thing in the morning, my hands might be stiff, making it hard to use the touchscreen accurately right away. I've learned to be patient and wait for things to loosen up a bit before using my phone extensively.

These challenges can definitely make using a smartphone less enjoyable and sometimes even a bit stressful. However, there are some features and settings that can help:

- **Accessibility settings:** Most smartphones have built-in accessibility features that

can be helpful for people with arthritis. These can include things like increased font size, bolder text contrast, and voice control options.

- **Large-icon mode:** Many phones allow you to switch to a "large-icon mode" which makes app icons and text larger and easier to see and tap on.
- **Voice assistants:** Virtual assistants like Siri or Google Assistant can be a great way to control your phone with your voice instead of your fingers. You can use voice commands to make calls, send texts, set reminders, and more.
- **Stylus pen:** Using a stylus pen can improve your accuracy when tapping or swiping on the screen, especially for tasks like handwriting recognition or drawing.

By using these tools and being patient with myself, I can still use my smart phone to stay connected, get things done, and even have some fun. Arthritis might slow me down a bit, but it doesn't have to stop me from using the technology I enjoy!

Dan: What about other electronics in your house – television controls for example?

Gemini: You're right, television remotes can definitely be a challenge with moderate arthritis. Here's how they can cause some trouble:

- **Small buttons:** Those tiny buttons on a standard remote can be difficult to grip and press, especially if my fingers are stiff or swollen. My thumbs might not have the dexterity to hit the exact center of the button every time, leading to frustrating missed presses.
- **Multiple buttons:** Having so many buttons crammed together can be confusing and overwhelming. Trying to find the right button quickly can be a struggle, especially if the labels are small or not backlit.

- *Shape and weight:* Traditional remotes are often thin and lightweight, which might sound good, but they can be tricky to hold onto securely with limited hand strength. A smooth, plastic surface can also be slippery for arthritic hands.
- *Reaching for the remote:* Bending over or reaching for the remote on the coffee table can be painful for sore shoulders or a stiff back. Sometimes, the remote seems to mysteriously disappear just when I need it most!

Here are some ways I've learned to cope with these remote woes:

- *Big Button Remotes:* These lifesavers have large, clearly labeled buttons that are easy to see and press. They might have fewer buttons overall, focusing on the most commonly used functions. Some even have backlighting for nighttime use.
- *Universal Remotes:* These can be programmed to control multiple devices like the TV, cable box, and sound system. This reduces the clutter of multiple remotes and allows for fewer buttons to learn.
- *Voice Control:* Many TVs and cable boxes now have voice control features. This allows me to control the volume, change channels, or even search for programs using my voice, eliminating the need for the remote altogether.
- *Remote Holsters:* These handy devices attach to the armrest of your couch or chair, keeping the remote within easy reach and preventing those frustrating "lost remote" moments.
- *Smartphone Apps:* Many cable providers and streaming services offer apps that allow you to control your TV with your phone. This can be a good option if my hands are feeling particularly sore on a given day. By utilizing these options, I can navigate the television with more

ease and less frustration. Arthritis might make using the remote a bit of a chore, but a little creativity and some helpful tools can go a long way!

Dan: Are there any problems using appliances, such as a microwave oven or a dishwasher

Gemini: Even with moderate arthritis, using appliances like microwaves and dishwashers can be manageable, but there can be a few hurdles to overcome. Here's how:

Microwave:

- *Reaching for buttons:* The control panel on a microwave, especially if it's mounted overhead, can be difficult to reach for someone with limited shoulder mobility. Microwaves with lower-mounted controls or those with accessible buttons on the door can be easier to use.
- *Setting the timer:* Those tiny buttons for setting the timer can be fiddly with stiff fingers. Look for microwaves with larger buttons or even touchscreens that allow for easier selection of time.
- *Lifting heavy dishes:* Taking a hot dish out of the microwave can be tricky, especially if it's heavy and awkward to handle. Using microwave-safe potholders or mitts with good grip is essential. Consider using lighter weight dishes in the microwave whenever possible.

Dishwasher:

- *Loading and unloading:* Bending down to load and unload the dishwasher can strain your back and knees. Pull-out racks at the bottom can make reaching the back easier. You can also use a stool to sit down while loading or unloading.
- *Heavy dishes:* Similar to the microwave, lifting heavy dishes in and out of the dishwasher can be difficult. Consider using a dishwasher basket specifically

designed for silverware and lightweight items, reducing the weight you need to lift in each hand.

- *Rack adjustments:* Adjusting the racks in the dishwasher can be tough if the knobs are stiff or require a pinching motion. Look for dishwashers with easy-grip handles or levers for adjusting the racks.

Dan: If I am designing a product, such as a basic hand tool, how can I best develop new ideas that can help people with arthritis?

Gemini: Here are some general tips that can help with using appliances and managing arthritis:

- *Keep frequently used items within easy reach:* Store dishes, utensils, and cleaning supplies you use often in lower cabinets or drawers to avoid excessive bending or reaching.
- *Utilize adaptive tools:* There are many tools available to help people with arthritis manage everyday tasks. For example, gripper pads can improve your grip on slippery surfaces or jar openers can help you twist lids without straining your hands.
- *Delegate tasks:* Don't be afraid to ask for help! If you live with family or have close friends, delegate tasks like loading the dishwasher or reaching for high cabinets.
- *Listen to your body:* Don't try to push yourself too hard. If you're feeling pain or stiffness, take a break and come back to the task later.

By being mindful of these challenges and utilizing some simple strategies, you can still use appliances like microwaves and dishwashers effectively, even with moderate arthritis. Here are some key strategies you can use to develop new ideas for hand tools that can help people with arthritis:

Understanding the User:

- *Research:* Conduct user research to understand the specific challenges faced by people with different types and severities of arthritis.
- Talk to occupational therapists or doctors who specialize in arthritis.

Look for online forums or support groups for people with arthritis.

- *Observe and Prototype:* Observe people with arthritis using existing tools. Watch for any difficulties they encounter and identify areas for improvement. Develop low-fidelity prototypes (e.g., cardboard cutouts) to test different design concepts with potential users and get their feedback.

Focus on Pain Points:

- *Grip and Dexterity:* Many people with arthritis struggle with grip strength and limited dexterity. Focus on designing tools with large, comfortable handles that are easy to grip and require minimal pinching or twisting motions. Consider incorporating rubberized or textured surfaces for improved grip.
- *Reduced Reach:* Reaching for tools or applying a lot of force can be difficult. Design tools that are lightweight and require less effort to use. Explore features like extendable handles or built-in levers to reduce the reach and force required.
- *Minimize Stress:* Repetitive motions or awkward postures can exacerbate pain. Design tools that promote a neutral hand position and reduce the need for sustained force or awkward grips.

Think Beyond the Tool:

- *Multifunctionality:* Consider designing tools that can serve multiple purposes, reducing the number of tools needed and minimizing the need to switch grips or reach for different tools.
- *Ease of Use:* Design with simplicity in mind. Clear instructions, minimal moving parts, and easy cleaning are all important features for people with arthritis.
- *Customization:* One size does not fit all. Explore features that allow for customization, such as adjustable handles or interchangeable attachments, to cater to different hand sizes and grip strengths.

Examples of Design Features:

- *Rocker blades or rollers:* These can replace the need for squeezing motions on tools like can openers or jar openers.
- *Trigger grips:* These can be easier to use than traditional squeeze grips for people with limited hand strength.
- *Magnetic pick-up tools:* These can eliminate the need to bend down and pick up dropped items.
- *Weighted bases:* These can provide stability for cutting tools or other items that might be difficult to hold steady.

Additional Tips:

- *Partner with Occupational Therapists:* Collaborate with occupational therapists who can provide valuable insights into the specific needs of people with arthritis and the types of tools that can be most helpful.
- *Consider Aesthetics:* Don't sacrifice design for functionality. Create tools that are not only helpful but also visually appealing and comfortable to use.
- *Test and Refine:* Continuously test your prototypes with potential users and incorporate their feedback into the design process.

By following these strategies and focusing on the specific needs of people with arthritis, you can develop innovative hand tools that make everyday tasks easier and less painful.

Dan: Thank you, that was great. Can I come back to you later with more questions after I have had a chance to think about your responses?

Gemini: You're welcome! I'm happy to help in any way I can. Absolutely, feel free to come back with any further questions you may have about arthritis or designing products for people with arthritis. I will do my best to answer your questions based on the information and data I have been trained on.

Dan Formosa Ph.D.

Dan consults with companies and organizations worldwide on design and innovation. An early proponent of “design for all” (a.k.a. Inclusive Design), he also lectures internationally on research and the future of design. He established his company ThinkActHuman with the goal of design for a better world. Dan holds degrees in product design, ergonomics and biomechanics. In addition to ThinkActHuman, he co-founded 4B Collective, focused on design and gender, and co-founded the Masters in Branding program at the School of Visual Arts in New York.

He is the recipient of numerous awards, including Smithsonian’s Cooper-Hewitt National Design Award (on behalf of Smart Design). He also received IxDA’s first annual Interaction Design Award, in the



“Disruptive” category, for his work with Ford Motor Company. His work is included in the permanent collection of the Museum of Modern Art. He appears in a number of documentary films on design, including the award winning 2020 Life on Wheels.