pullpal™

Dog whistle and training
tool for senior citizens



BY DAVID MINOGUE

PATENT PENDING



BACKGROUND

There is a lack of products to assist older adult aged 65+ with caring for their pets. Pet accessories often overlook the specific needs of senior citizens, making them less accessible and user-friendly for older adults.

55% of elderly adults have a pet.

20% of seniors care for a dog on their own.

80% of older pet owners report that their pets help reduce stress.

COMPANIONSHIP WITH SENIORS

Pets, provide significant emotional and physical benefits for elderly individuals, **offering companionship, reducing stress, and encouraging a more active lifestyle.**



PHYSICAL BENEFITS



Increased Physical Activity

Dog walking encourages regular exercise, improving cardiovascular health, mobility, and muscle strength.



Improved Heart Health

Studies have shown that pet ownership is associated with lower blood pressure and cholesterol levels.



Better Immune System

Exposure to a dog's microbiome can strengthen the immune system, reducing susceptibility to infections.



Increased Balance and Coordination

Caring for and walking a dog helps maintain balance, coordination, and physical endurance.

Information from Harvard Health Publishing, American Psychiatric Association, and Oxford Academic Press

MENTAL & EMOTIONAL BENEFITS



Reduced Loneliness

Dogs provide companionship and reduce feelings of social isolation, a common issue among the elderly.



Lower Stress Levels

Interacting with dogs increases levels of oxytocin and serotonin, reducing stress and anxiety.



Combat Depression

A dog's unconditional love and interaction can alleviate symptoms of depression in older adults.



Improved Cognitive Function

The routine of caring for a dog can enhance memory, focus, and cognitive engagement.

Information from Harvard Health Publishing, American Psychiatric Association, and Oxford Academic Press

3 PRIMARY INTERVIEWS



Dawn W

Age: 68



Wesley

Austrailian Shepard

Pain Points:

Feeding Wesley the right amount, Cleaning and Combing, Remembering to give him his medicine, the expensive food.



Donna D

Age: 76



Penny

Black Lab

Pain Points:

Bringing Penny to the vet, Chasing after squirrels on walks, Washing her paws when she comes back inside, Waking her up in the middle of the night.



Steven K

Age: 83



Scout

Golden Doodle

Pain Points:

Scout going to the bathroom at night, Being too energetic, Reaching down to fill up the dog bowl, Bathing, Pulling hard on leash.

INTERVIEW FINDINGS & ANALYSIS

"I just wipe him down with a wet cloth"

"It's such a hassle to get her into the tub, Penny just hates baths, and I don't like washing her either"

IMPORTANCE OF CLEANING PAWS

ON THE CARPET

SENIOR CITIZENS CLEAN THERE DOGS LESS → ITS DIFFICULT

"She's always begging to go outside, she runs out for five seconds, comes back in, and her paws are filthy. The carpet is constantly dirty... I keep a towel by the door to try and wipe them" → NOT EFFECTIVE

DIRTY PAWS ON THE BED


Psychology Today

Find a Therapist · Get Help · Magazine · Today

ANIMAL BEHAVIOR

The Challenges and Benefits of Pet Ownership for Seniors

Seniors who like animals should have opportunities for human-animal interaction

Zazie Todd Ph.D.
Fellow Creatures

Recently, a 104-year old man from California was in the news because of his love for his rescue dog. After being turned down by several rescue organizations, Lionel's Legacy allowed Milt Lessner to be a long-term foster for a senior dog, Layla. "We're trying to stay in good health, both of us. So far, we've succeeded and we're still alive," Lessner told the BBC.

In a nutshell, this story shows both the benefits and challenges for seniors wanting to have a pet. New research by Prof. Marie-José Enders-Slegers and Dr. Karin Hediger, published in *Anthrozoös*, reviews the scientific literature on pet keeping for older adults. They find that pets can provide social interaction and protect against





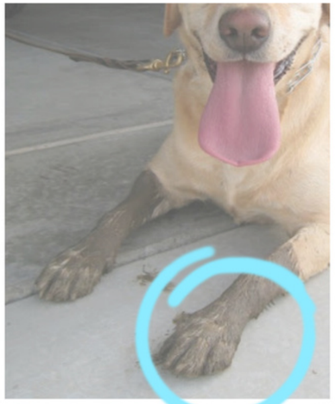

Home > Pet Health > Dog Health

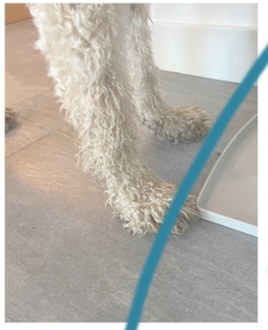
Dog Paw Infections: Causes, Symptoms, and Treatments

by JoAnna Pendergrass, DVM
Reviewed by Catherine Barnette, DVM on 03/26/2024. Published on 03/18/2023









HOW TO CLEAN DOG PAWS: KEEP YOUR HOME MUD-FREE

Dog owners everywhere face the frustration of muddy paw prints that mess up their clean floors and furniture. A spotless home and your pet's hygiene depend on how well you clean your dog's paws. Your dog brings in dirt, bacteria, and harmful substances from outside that can spread all over your home.

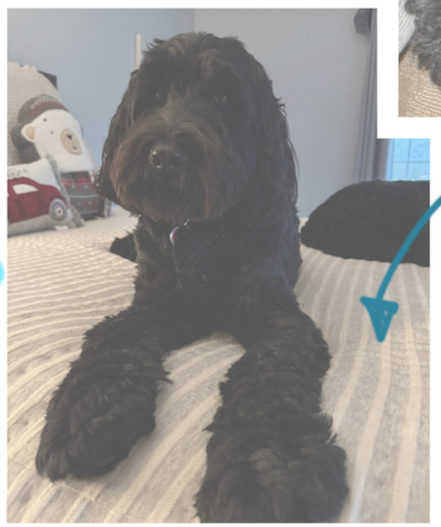
You have many ways to keep your dog's paws clean before they step inside. This piece covers the best methods to clean your dog's paws after walks and outdoor adventures. You'll find the quickest ways to clean paws, must-have supplies, and smart tips to create a paw-cleaning routine that works for you and your furry friend.

UNDERSTANDING THE IMPORTANCE OF CLEAN DOG PAWS

Clean dog paws matter more than just hygiene. This significant aspect of canine health care affects both your pet and their environment. Pet owners who understand the importance of paw cleaning can create better care routines for their four-legged companions.

HYGIENE CONSIDERATIONS

Clean paws protect dogs from environmental contaminants. Dogs' paws adapt well to walking on different surfaces, which means they come in contact with many substances. Dr. Christian Broadhurst, senior veterinarian at Clay Humane in Florida, points out that cleaning your dog's paws after walks protects them from allergens in their surroundings.



INTERVIEW FINDINGS & ANALYSIS

"His energy level is too much for me some days."

AVMA Publications

Previous Article Next Article

Leash-related injuries associated with dog walking: an understudied risk for dog owners?

Rodrigo Rosa MV, CVPP, MANZCVS, DABVP and Richard E. Buckle... View More

DOI: https://doi.org/10.2460/javma.23.11.0608

Volume/Issue: Volume 262: Issue 7

Received: 06 Nov 2023 | Accepted: 20 Feb 2024 | Online Publication Date: 05 Apr 2024

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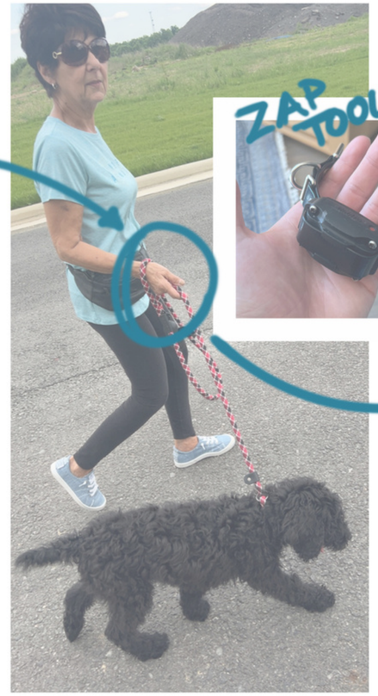
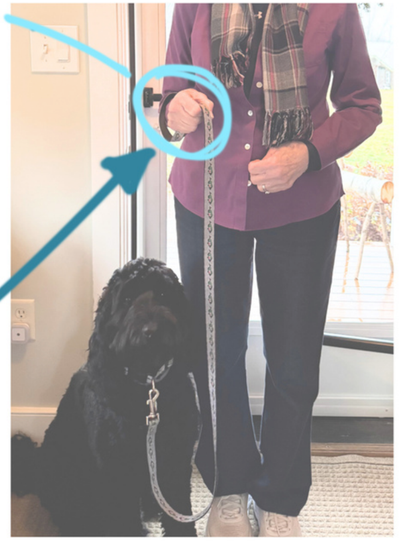


ZAP TOOL



WRAPPED AROUND WRIST FOR SUPPORT + STABILITY



"Wesley will see another dog or something he wants to smell and he pulls so hard on the leash, I can barely hold on!"



2 HANDS

ACTIVITY GREAT FOR DOG AND OWNER





AARP Join Renew

HOME & FAMILY

Dog Walking Can Be Rough for Older Adults

Study notes the risk of bone fractures for those 65 and over, suggests obedience training as a remedy

WALKING

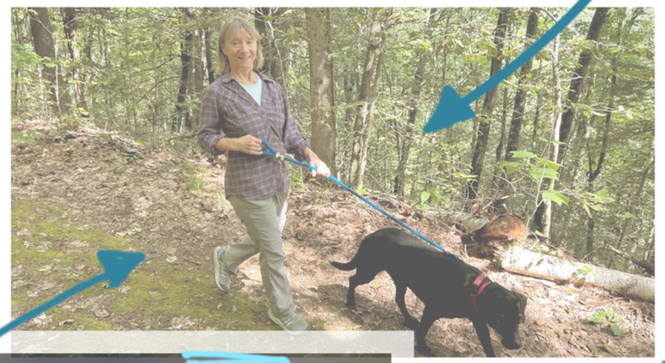


GETTY IMAGES

By Kent Allen

EN ESPAÑOL | Published March 07, 2019

Though a dog can be your best friend, and walking is



Dog Walking for Seniors: The Benefits and Risks

by admin | Aug 13, 2020 | Uncategorized | 0 comments



WALKING

DOG PULLING SO HARD ON THE LEASH

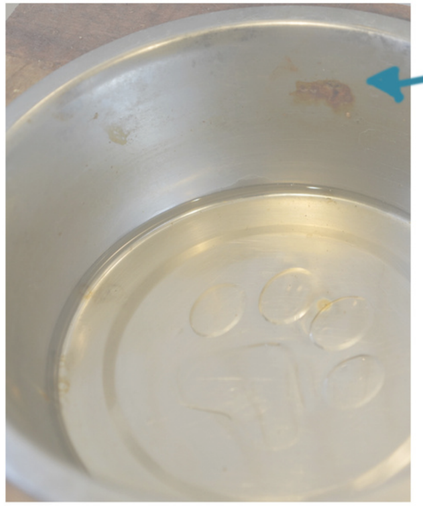
"I want to play and walk with her more, but she's too fast and strong for me."

INTERVIEW FINDINGS & ANALYSIS

"I hate bending over to pick up the water bowl, and every time I do, it spills all over the floor."

FOOD STORAGE



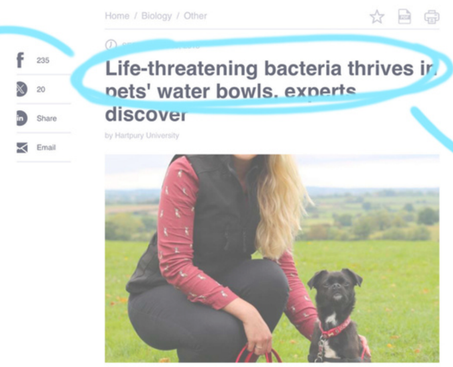


FOOD, DIRT, GRASS & BACTERIA

BACTERIA GROWTH



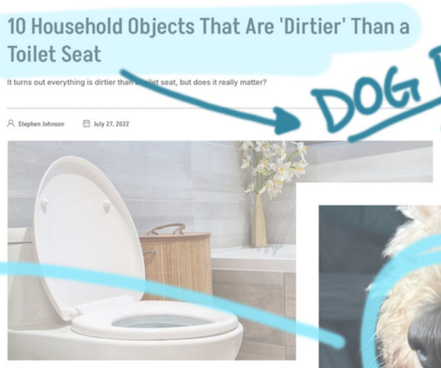








ACTUAL DIRT



DOG BOWL





"Oh my God, I love Scout but I hate feeding her... it's so frustrating"

FOOD AND WATER MANAGEMENT



Most people don't take any chances when it comes to disinfecting to avoid sickness and germs. Just the idea of touching a subway pole or using a public restroom has us reaching for the hand sanitizer. But what about our pets? Fluffy and Fido are susceptible to bacteria and viruses, just like humans.

"Well I clean the food bowl but I can't remember the last time I cleaned the water bowl, maybe a month"

NOT ENOUGH

"I don't know if I'm feeding him enough or too much."

Design DIRECTIONS

Dog Maintenance

EX: Combing, Medication management, Paw wash, Shedding hair, Bathing, Nail trimming, Odor management, Visits to the vet, Grooming.

Dog Activity

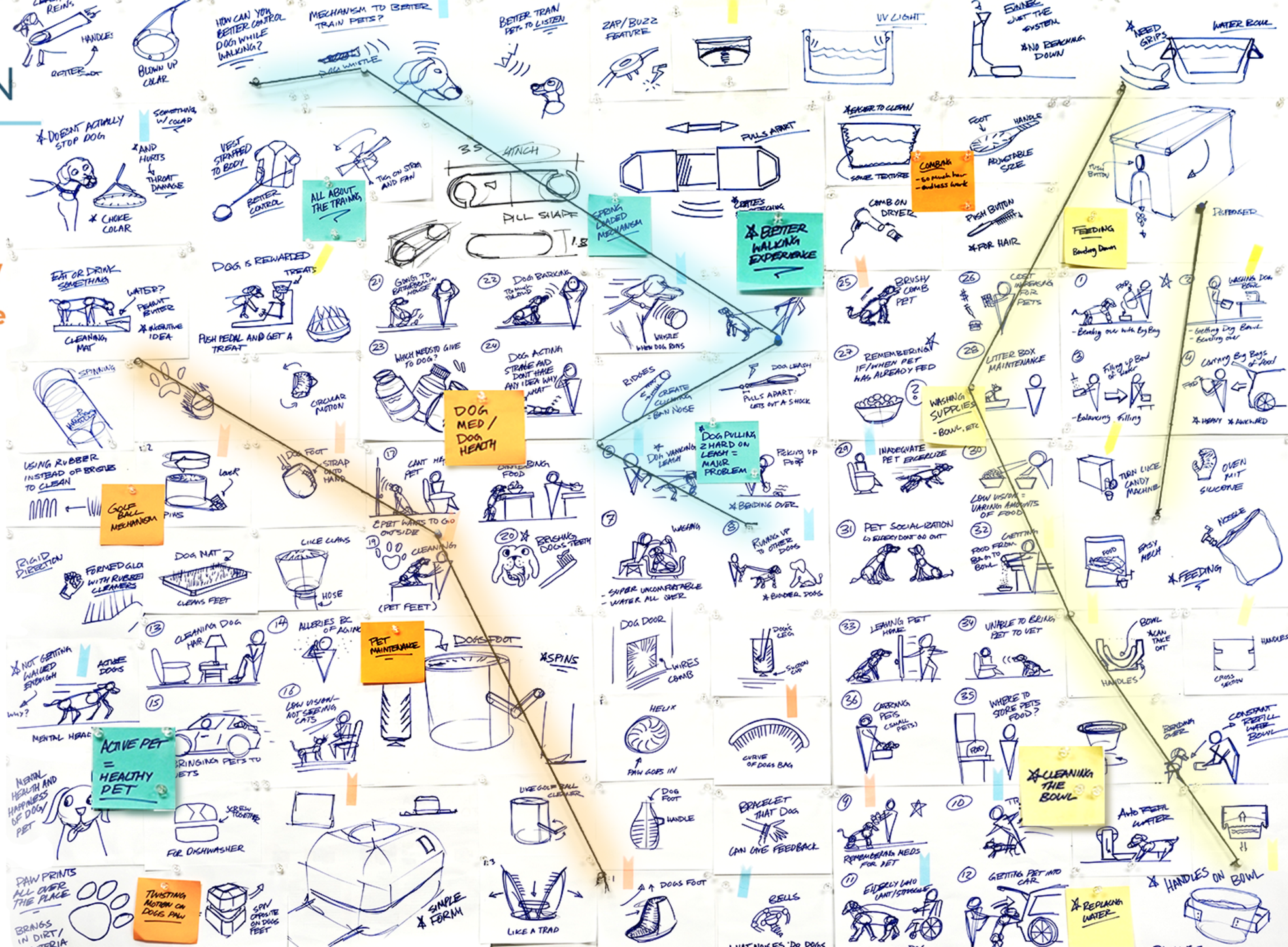
EX: Walking Dog, Getting out of the house, Exercise, Playing with pets, Fetch, Leash training, Travel comfort, Pet waste process.

Dog Feeding

EX: Water and food spilling, Purchasing Food, Picky eating habits, Dog asking for treats, Food storage, Healthy food, Clean bowl, Filling up bowl, Dogs eating too quickly.

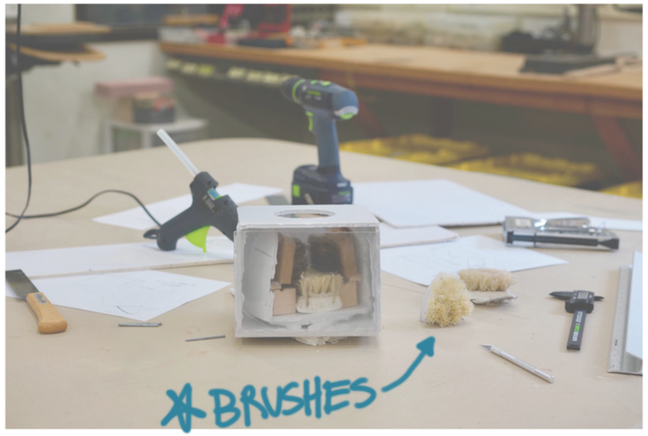
IDEATION

- Dog cleaning/ washing/ grooming/ Maintenance
- Dog getting out of the house/ excercise
- Dog eating/ drinking
- Connection/ Design Direction

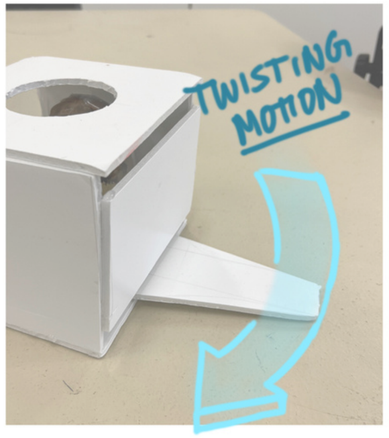


PROTOTYPING

DOG MAINTENANCE

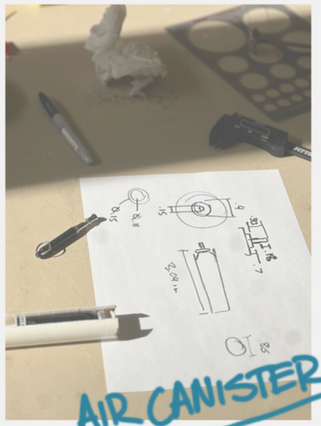




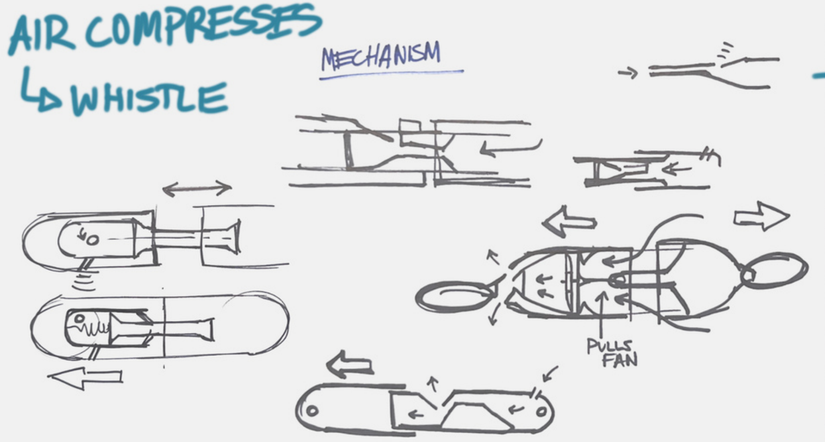


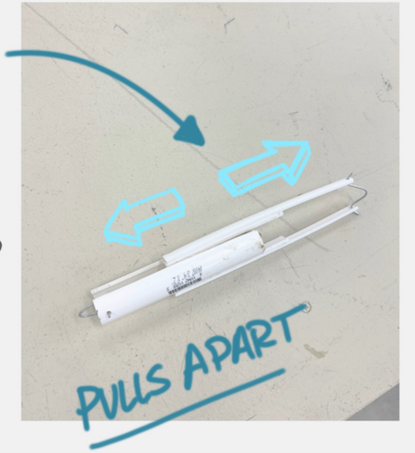


DOG ACTIVITY



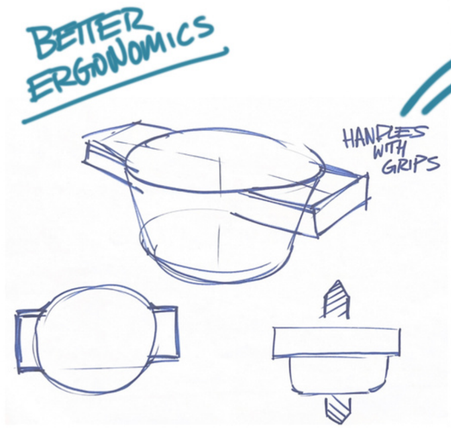






DOG FEEDING









FEEDBACK

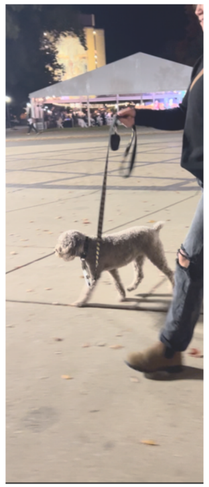
INTERVIEWS & RESEARCH

DOG MAINTENANCE



- Dogs resisting putting their paws into the device.
- Users had difficulty operating the twisting handle, especially for older adults with limited dexterity.
- No way to accommodate different paw sizes.
- Further revisions needed to effectively clean the dog's paw, would likely require water and/or soap.

DOG ACTIVITY







- Dogs responded immediately, appearing shocked.
- Product needs to be more sturdy, compact, or tough to withstand the pressure of the pulls.
- Non-invasive and humane approach to leash training.
- Portable and convenient during walks.
- **Whistle successfully stopped the dog from pulling too hard or fast on the leash.**

DOG FEEDING

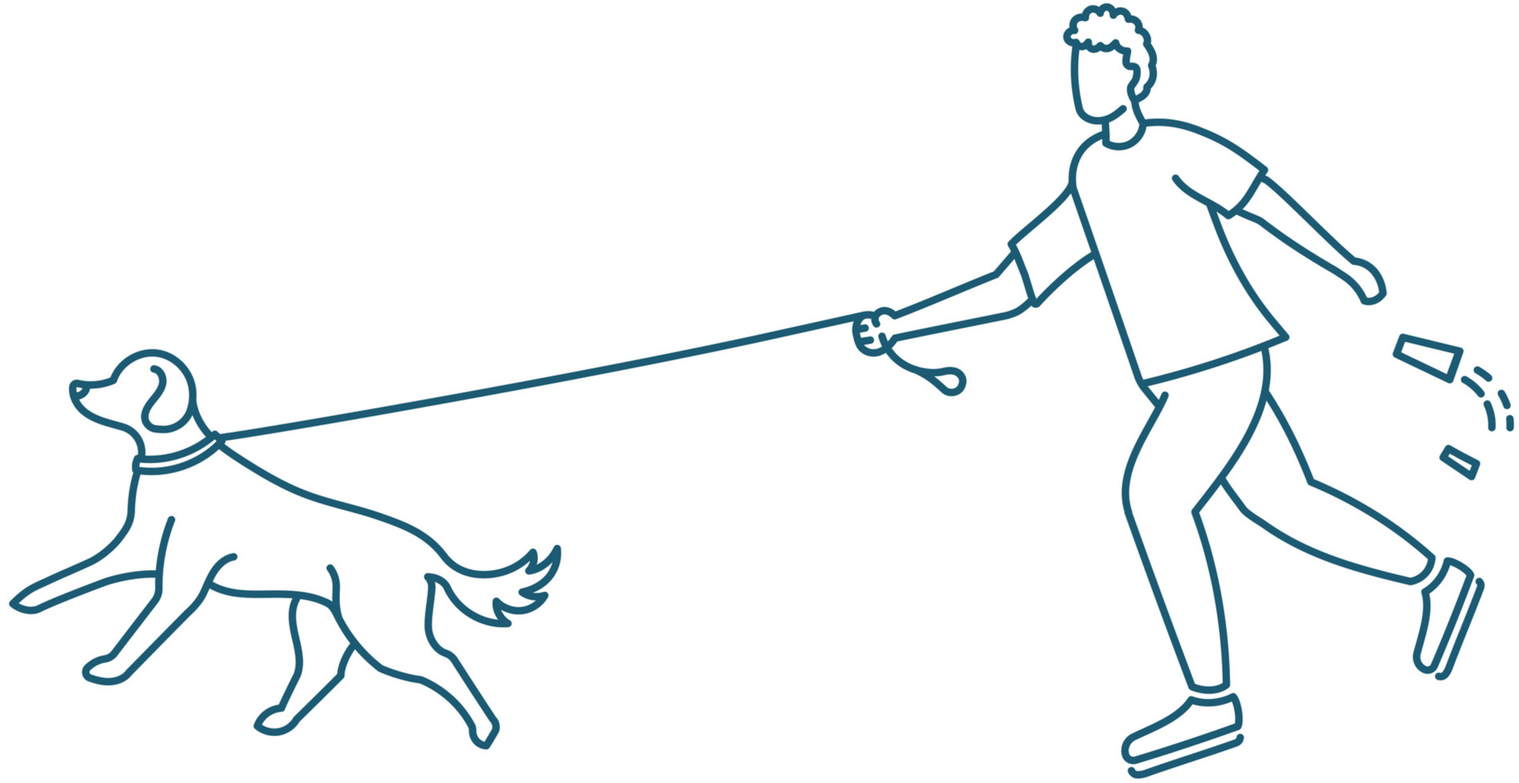




- Handles made lifting or carrying the bowl easier.
- Reduced water spillage when carefully lifted.
- Did not adequately address the difficulty of bending down to pick it up.
- The mechanism made it harder to clean.

”My dog is only 33lbs but she pulled so hard ***I broke my wrist***“

-Kathie Arnold, 78 yrs



MARKET ANALYSIS

11%

of **elderly pet owners** report experiencing **falls** related to their pets, especially while **walking dogs.**



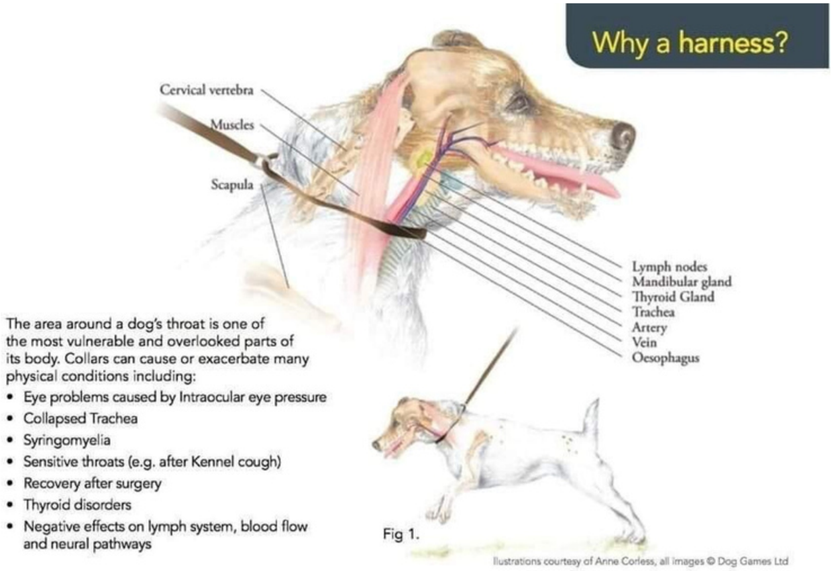
CAN WE CREATE A **HUMANE AND EFFECTIVE** SOLUTION?



CURRENT SOLUTION:

PRONG/CHOKE COLLAR

Choke collars cause fear and injury, **damage the trachea and neck**, increase anxiety, and are ineffective for proper training.



Information from University of Illinois Urbana-Champaign, College of Veterinary Medicine

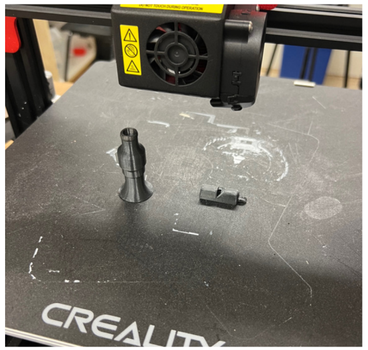
2ND ROUND OF PROTOTYPING

Over the course of the project more than **8 different mechanisms and prototypes** were developed to explore shape, size, clipping techniques, whistles, suction, etc. and tested on dogs.





Testing different air canisters



3D printing whistles



purchasing off the shelf whistles

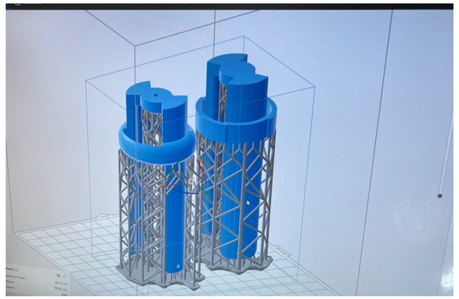


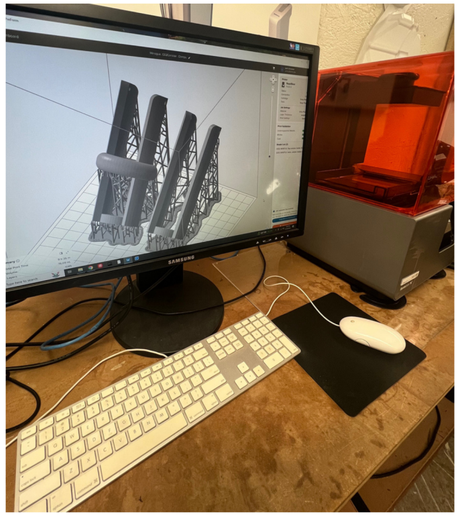
Studying, building, and testing whistles to obtain the right pitch was essential to create a working prototype.

Dog whistles need to reach a pitch maintaining a frequency between **1600 Hz and 22000 Hz.**

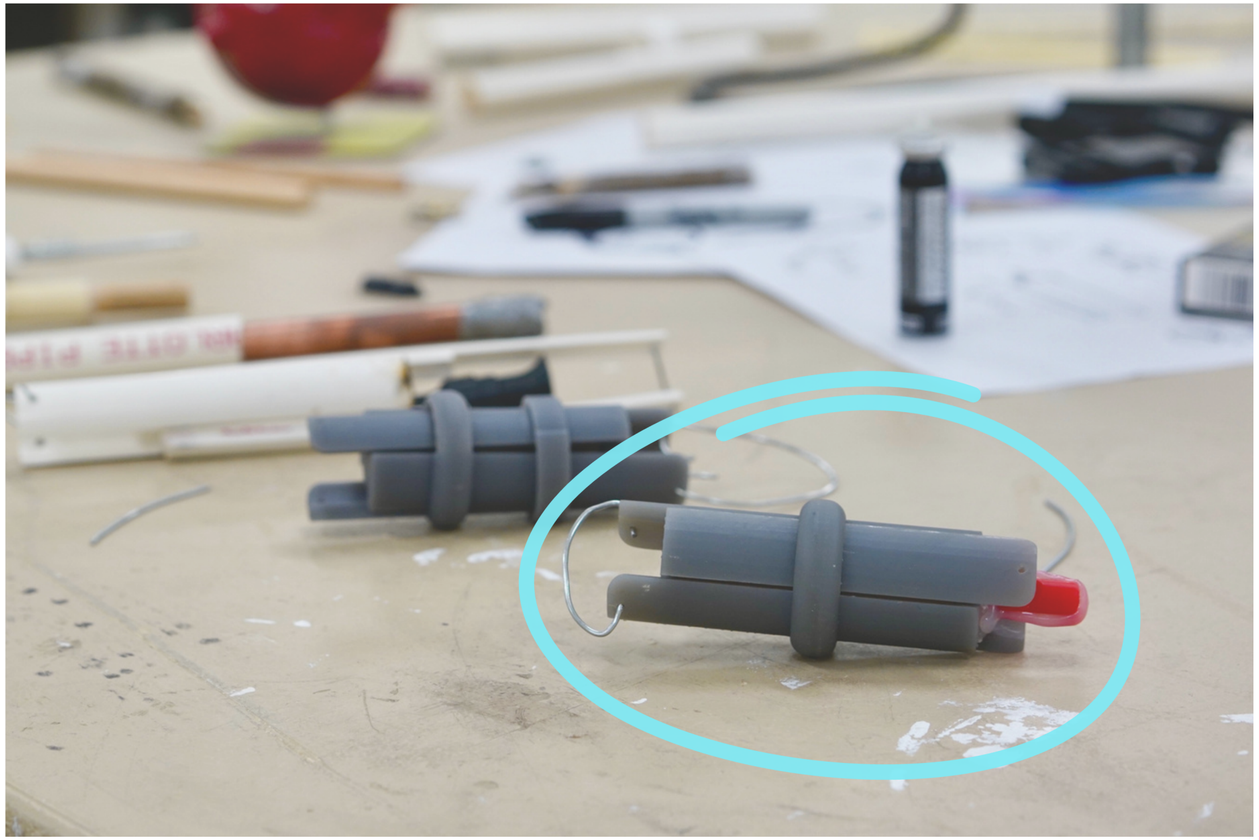
2ND ROUND OF PROTOTYPING

The final mechanism and prototype was created using Formlabs resin printers with Rigid 10K Resin, **ensuring extra durability** and strength to **withstand the force of dog pulls during testing.**





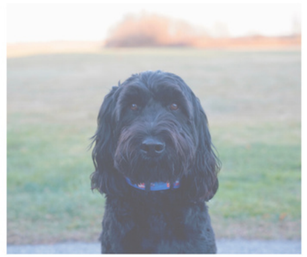




PROTOTYPE TESTING





















DOG PULLS ON THE LEASH



WHISTLE BLOWS, DOG REACTS



DOG RETURNS TO WALKING WITHOUT PULLING

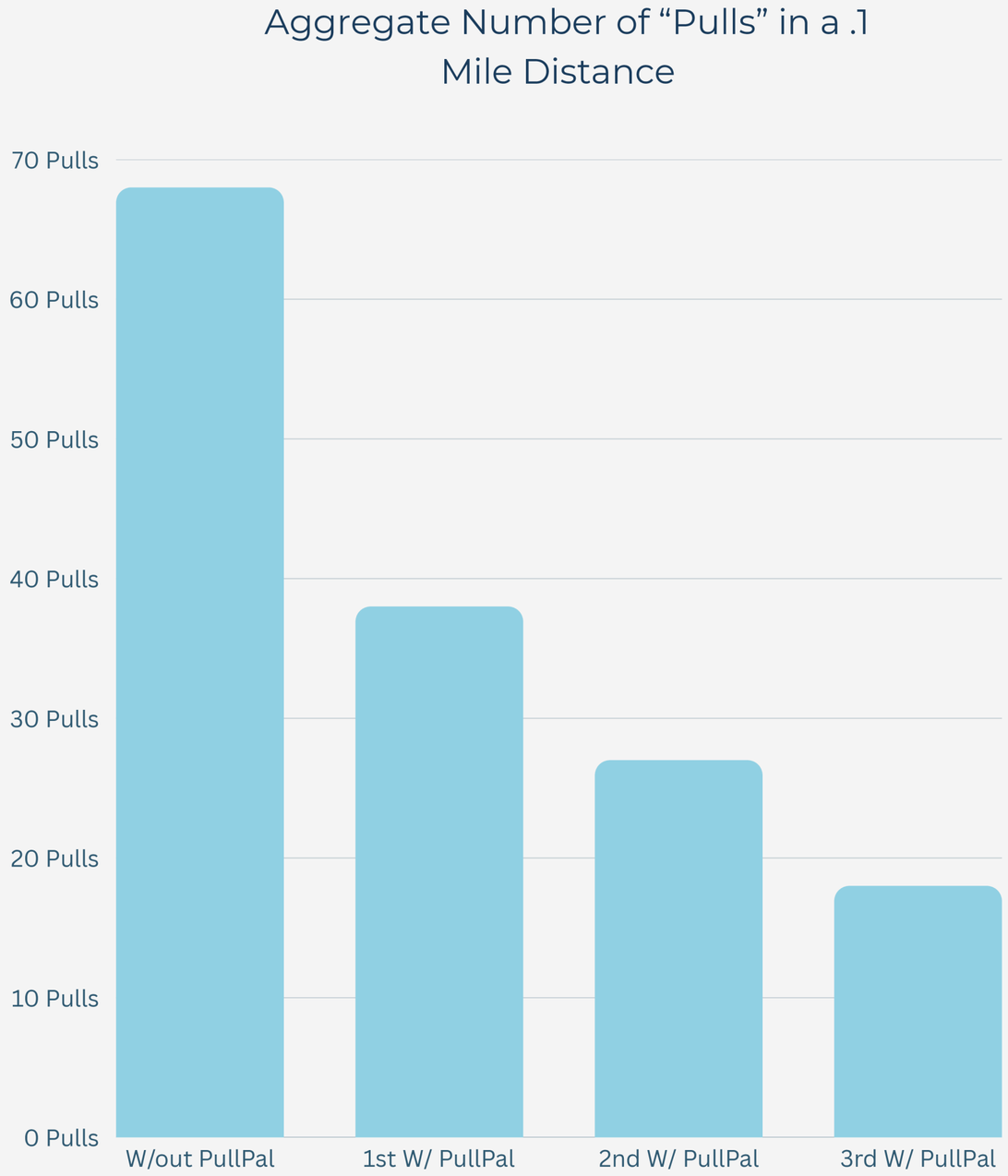
RESULTS

in this test **38 dogs** were walked .1 miles four times

1. Walked <u>without PullPal</u>
2. Walked with PullPal
3. Walked again with PullPal
4. Walked a final .1 Miles with PullPal



Data shows that the **PullPal significantly decreased amount of pulls** and after repeated training reduced pulls by **73.5%.**



MOOD BOARD











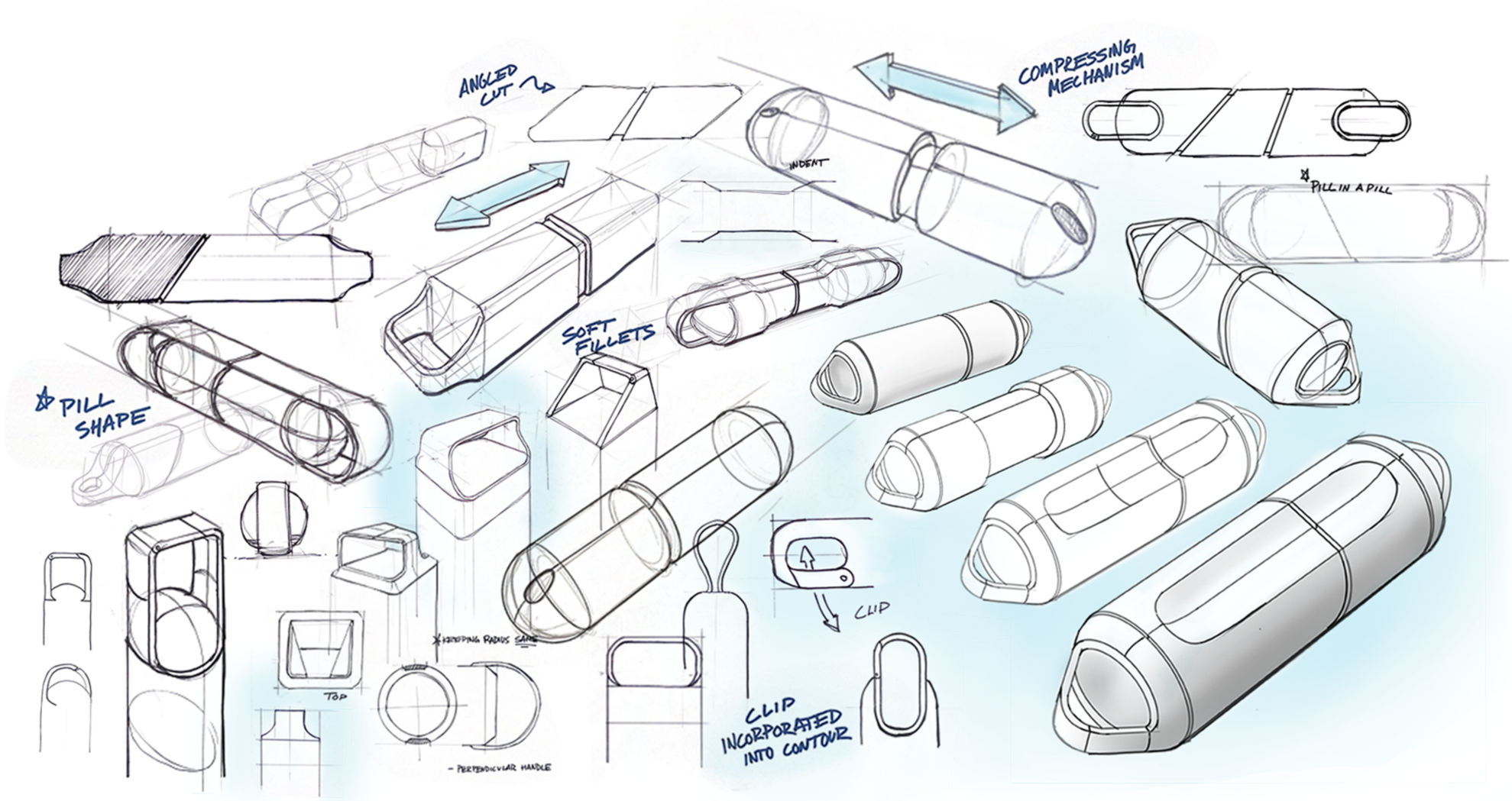




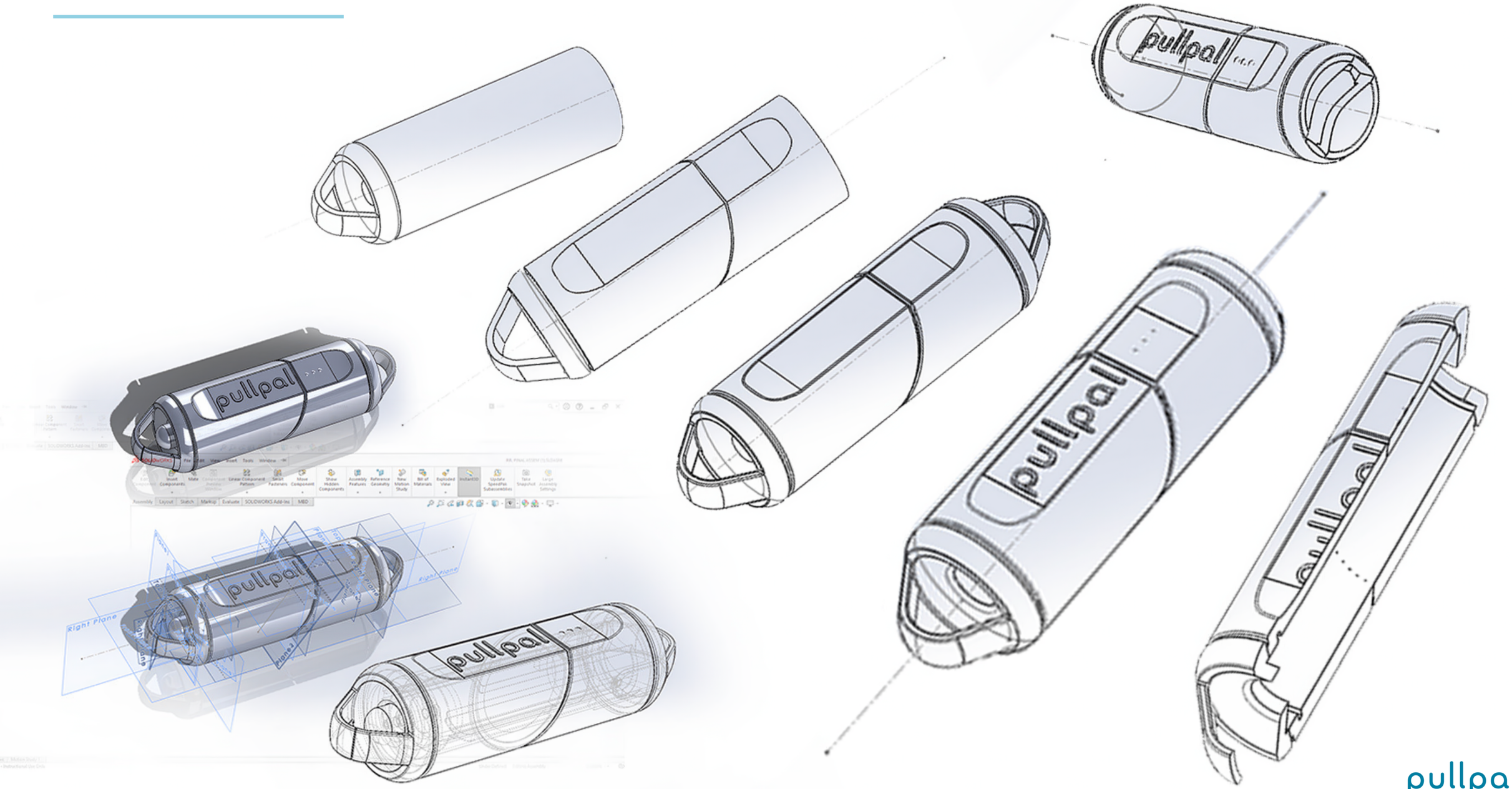




FORM DEVELOPMENT

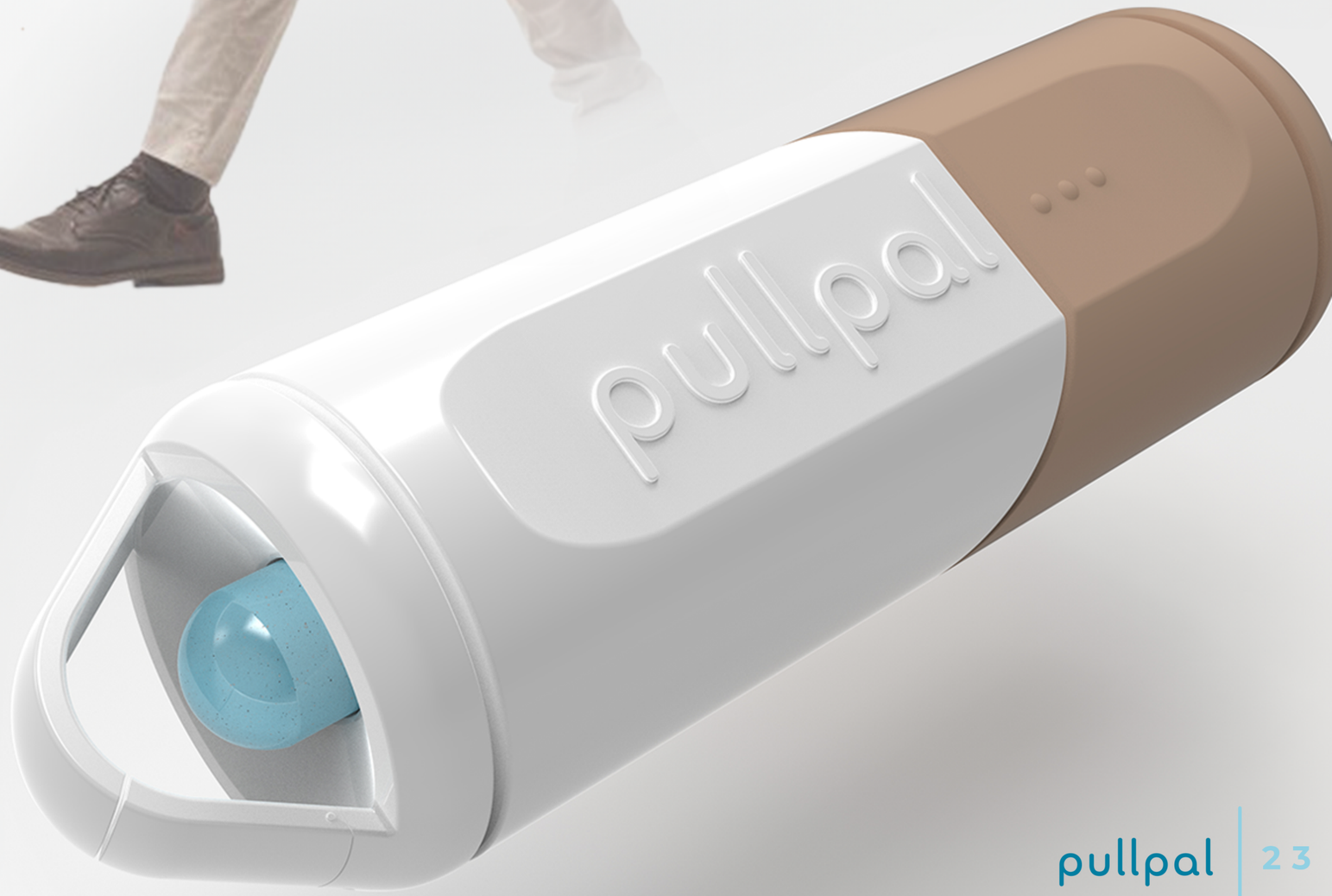


CAD DEVELOPMENT





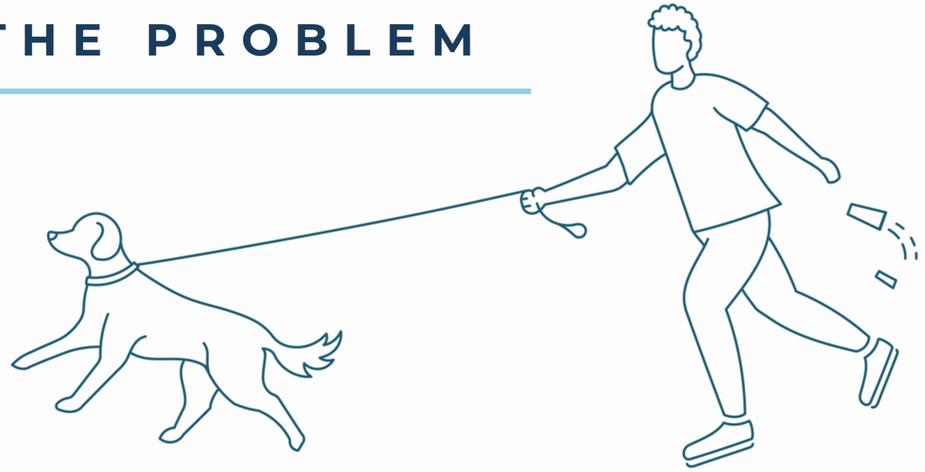


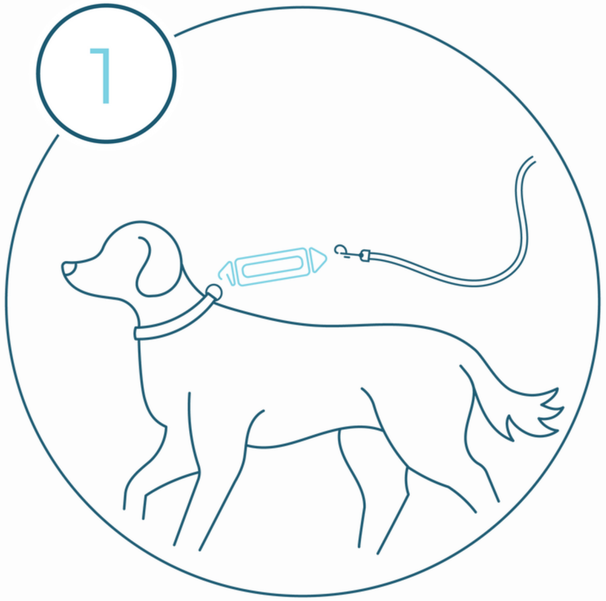


pullpal

DOG WHISTLE AND TRAINING
TOOL FOR SENIOR CITIZENS

THE PROBLEM



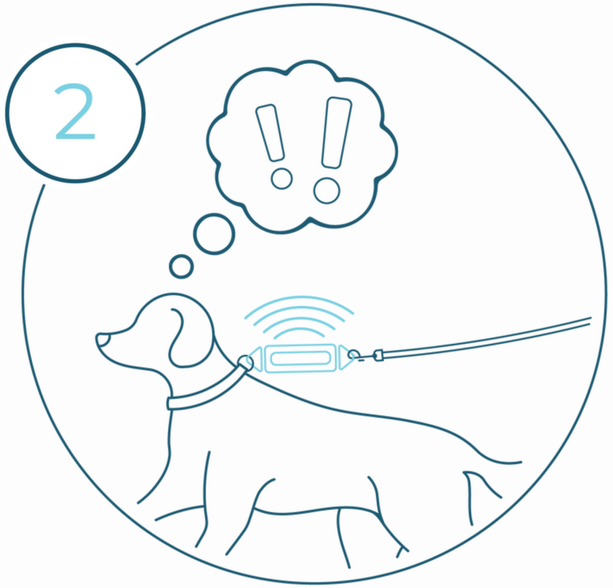


Assemble

Attach PullPal to your dog’s collar and the leash

In Action

When your dog pulls at the leash the dog whistle goes off



3 WALK CALMY!



Clip

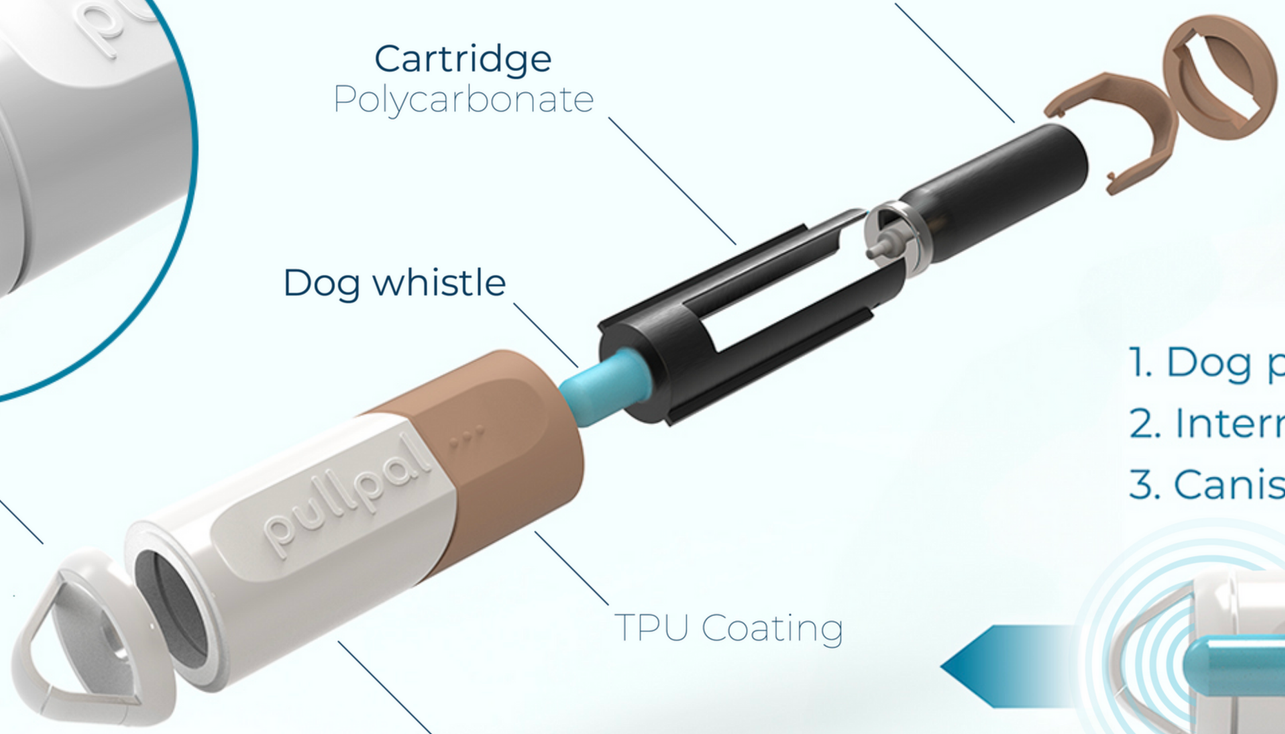
Mechanism allows for PullPall to be attached to dogs collar





Air Canisters

Readily available and inexpensive CO_2 filled air canisters



End Cap
ABS Thermoplastic

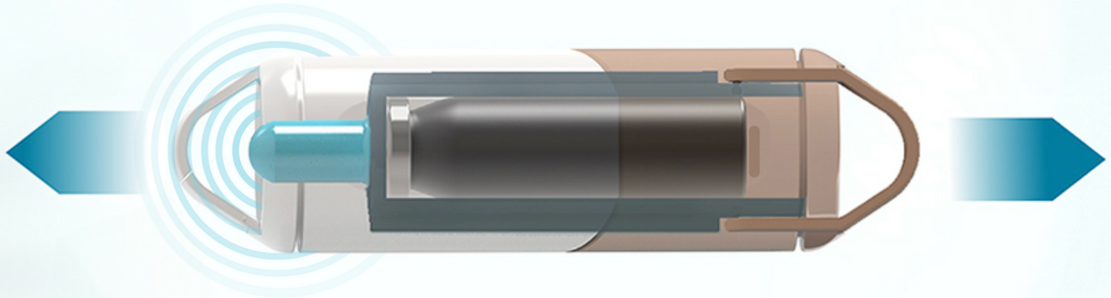
Cartridge
Polycarbonate

Dog whistle

TPU Coating

Main body
ABS Thermoplastic

1. Dog pulls on leash
2. Internal mechanism compresses
3. Canister releases air into whistle



REFLECTION AND NEXT STEPS

This experience taught me the importance of human-centered design, starting with a broad idea, narrowing to a problem, and creating a solution through testing and feedback. Failures with early prototypes were frustrating but reinforced the value of working prototypes and user validation. Every decision was intentionally user-focused which taught me how much thought and care go into even the simplest products.



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