

NATIONAL INSTITUTE OF DESIGN, Vijayawada

Simple Product Design 2

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Industrial Department

4 semester

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PREFACE

Simple product design is a course which involved the usage of all the major steps of design process (2 semester) from defining the design brief to representation of concept into a tangible medium. This is a document which holds all Major data related to the process in coming up with a Tangible product. In this case DROPS, the multifunction equipped in an aesthetic manner made for daily exercise.



FITNESS
WORKING





ACKNOWLEDGMENT

I would like to thank the following individuals for their presence during my project. Their Mentoring was a real help in this process. This research was supported by Pritam Paraye and Andrea Norohna. I thank our college from National Institute of Design who provided insight and expertise that greatly assisted the research. I thank Suresh for assistance with his workshop abilities. I would also like to show our gratitude to the Deepankar Bhattacharya for sharing their pearls of wisdom with us during the course of this research. I am also immensely grateful to the students of NID V for their comments on an earlier version of the manuscript

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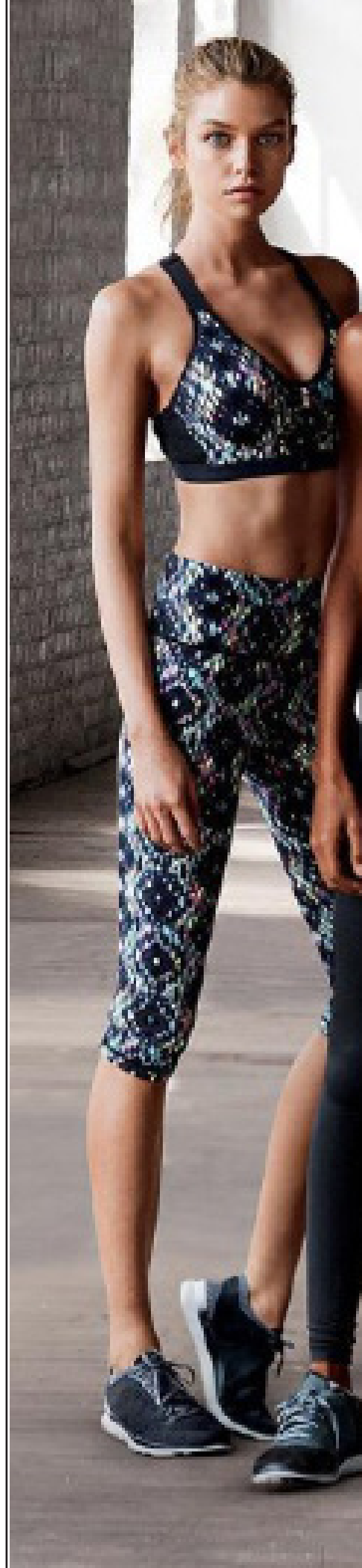
Creating multiple ideas and combining them to general Concepts

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Making mock-ups, functioning prototypes and pilot Production

THE CONNECTION

“User testing and feedback”







THE CAUSE

the concern to solve a problem

CONCEPT OF FEELING

The concept of providing designed indoor spaces for 'fitness and exercise' is very minimum in my area of research which is ANU Guntur. Perhaps the modern response to sedentary lifestyle and time pressures that our equipments and other exercise technologies are to be encouraged. Though the designs are constantly developing, the forms stay the same like the exposed industrial feel.

MEN OVERPOWERING WOMEN

Women are failing to exercise for fear of being judged over their appearance and ability at the gym, the fear of judgment is greater than women's self-confidence. The third major barrier was a fear over ability, whether they were good enough, too good and therefore unfeminine, stopping them.

OUTDOOR GYM

The outdoor gym is a gym built outside in a public park, with the all-weather construction of its exercise machines somewhat modeled on playground equipment. The ways to provoke the crowd to use outdoor gyms is also concern and to build such gyms.

UNHYGIENIC

You hit the gym regularly to be healthy and fit. Yet you may be getting more than flat abs and strong arms there. Gyms are hotbeds of germ activity, researchers say. Norovirus, which causes Stomach pain, vomiting, and diarrhea, can survive for a month on the surface of exercise machines. The fungi responsible for foot infections multiply at a blinding pace in the shower. And microbes like MRSA, an antibiotic-resistant bacteria that can lead to dangerous skin infections, lurk in the locker room. To help you stay safe, FITNESS asked top experts to ID the biggest danger zones in the gym and to share the best germ-beating strategies.

USEAGE OF SO MANY MACHINES

when every one so concerned about the machines being bulky and industrial looking, soo many machines to use and the process to se it another process.



Gold gym is one of the best gyms in the world. Gold's Gym International, Inc. is an American chain of international co-ed fitness centers (commonly referred to as gyms) originally started by Joe Gold in Venice Beach, California. Each gym features a wide array of exercise equipment, group exercise classes and personal trainers to assist clients. Its headquarters are in Dallas, Texas.



Numerous customers have reported Gold's Gym franchises acting in dishonest and unscrupulous ways. They have reported advertised deals not being honored, billing irregularities, contract terms being fraudulently altered by sales staff after signing and problems canceling accounts or relocating. A Gold's Gym in Provo, Utah, was successfully sued for fraud in 2006 for changing a contract after it was signed in 1999.[28] In November 2014, this gym along with 16 other gyms in Utah left the Gold's Gym brand and became part of the newly created VASA Fitness brand.[29] An accusation of the same conduct of fraud arose again in 2017. On February 10, 2017, the billing processor for the gyms, Paramount Acceptance, and 26 companies under the VASA Fitness name (including new gyms since 2014) were served with a consumer class action lawsuit with numerous causes of action including fraudulent misrepresentation, violations of the Telephone Consumer Protection Act, and violations of the Utah Consumer Sales Practices Act, with the entire complaint published by the plaintiff online.

THE CONTEXT

understaing the user and senario

ECOSYSTEM MAP

STAKEHOLDERS

The age group of 12 to 30 is more prominent in the gym. The students, instructions, bachelors, and the office workers are mostly who use gym in a regular basis. The maintenance workers to clean up the place. Administration workers who handle the maintenance and fee collection. People who supply the equipments.

FLY ON THE WALL OBSERVATIONS

Most of the equipments lack basic ergonomic factors such supportable, over stretching and seating positions. Heavy machines had no smooth finishes. It is so heavy that the rust had a breakage situation which also could be harmful to the users. Entrance was very scattered, which makes the gym look unwelcoming. Carpet was not laid which made the floor slippery leading to major accidents. No proper cushioning, most of it was exposed wood making the wood cut into the body. No changing room, problematic to change and is very time taking, infact the hostel boys find it difficult to go back and forth to the hostel which is pretty far. Insufficient fans causes sweat make them workout less thus losing the gym efficiency. The odour of the gym tends to be uninviting. Unavailability of instructions were difficult for

DISCOVER

There are many types of people coming to gym like the fitness freaks who like to build on muscles thus making to the regular member in a gym, then the people who want to cut down on fat and mostly have step into a gym for the first time so they are in need of proper instructions.

EMPATHISE

IMMERSE

DESIGN BRIEF

The intent is to design an interior as well as an exterior product which is portable enough to do multiple exercises.

Target audience

For the people who like to work towards fitness age- 13 to 50

Area of work

Gym equipments at ANU
Department of physical education

Relevance

For the people who like to workout and store the equipment in a particular place.

Functionality

Final product must not affect the way the exercises are performed.
no compromise in the number of exercises

Compactness

Truly compact and comfortable for use even in a small apartment. should be capable of collapsing/ folding into a small volume.

Build quality and Visual appeal

Must be strong yet non-bulky and potent yet inviting.

Semantics

Must successfully convey that it is a piece of fitness equipment but it should also blend into the home environment. Must look like a piece of Fitness equipment when in use and as a non-imposing household item, when not.

Cost

Must be truly affordable and well under the price of current home gyms.

Objectives and goals of the new design

Budget and schedule

Target audience

Scope of the project

Available materials/required materials

Overall style/look

Any definite “Do nots”

To enable one equipment do many exercises

more than 300 less than 500

frequent gym goers and inviting to females

high

wood, PoP, Thermocol, cast iron, silicon

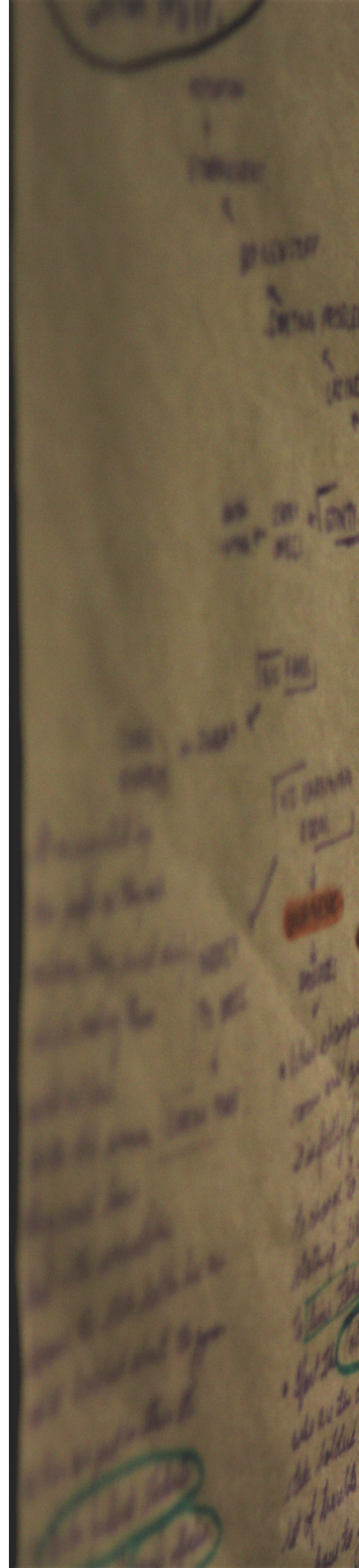
curvy, sensual, dual, balanced

no

MIND MAPPING

Area of opportunity

Arrangement of machines
Heavy machines
Blank walls
Accidents
Random crowd
Hygiene
Interiors
Ventilation windows
Space consuming equipments
Non smart machines
Lighting
Pathway
signages
Washrooms
Mirrors
Focus areas
Storage areas
Segregation of equipments
Ratio of men and women
Sweaty



EQUIPMENT SOURCE

↑
BROOKAGE
↑
ACCESSORIES
↑
SMALL CUTS
↑
[RENTED EQUIPMENT]

[BOOTH ROOM]

DEPARTMENT OF PHYSICAL EDUCATION
(Gymnasium)

[NO CARPET]

↓
SLIPPERY FLOOR
↓
ACCIDENTS

[NO CUSHIONING]

↓
EXPOSED WOOD
↓
INJECTIONS
↓
HEALTH ISSUES

[NO FLEXIBLE FLOOR]

↓
NO MATRONS
↓
NO OR WITH
↓
SHOULDER
↓
PAIN

Students have
shut their
mouths many times

ARMCHAIR - STOLE THE SHOW

MANY PEOPLE

NO INSTRUCTIONS

WORE
↑
WELL KNOWN
↑
WELL KNOWN

12:45pm
12:45pm

[Faded handwritten notes on a piece of paper pinned to the board]

[Yellow sticky note]

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INFORMATION COLLECTION

These equipments can improve your lifts, strength your imbalances and mobility.

Suspension trainers

Encourage you to move across all planes of Motion, turning simple bodyweight moves into killer multi-joint strength exercises. Better yet, it's super compact and can fit in literally any backpack or carry-on.

Resistance bands

Variety of workouts in limited space and Substitutes for a dumbbell. Adjustable bands allow you to tone your arms and chest without taking up too much valuable luggage room, and the door attachment can be fastened to your hotel room door with ease for extra resistance.

Gliders

Can take on a whole new life with the addition of an exercise ball. You might think packing a fitness ball is unrealistic, but with only a 13-inch diameter, the Natural Fitness Balance Disc provides the same effect working your core muscles to exhaustion without sacrificing much space. Plus, you can place it on your office chair to improve your posture.

Exercise Band

Resistance bands are multi-utility fitness Accessories that work multiple areas of the body such as hands, thigh, calf muscles.

Chairless

Is a simple tool for sitting, a textile strap joined into a loop, measuring 85 cm in length and 5 cm in width, which can be wrapped around the back and knees in order to stabilize the body and relieve tension, while in a seated position. Chairless is mobile. The strap can be folded into a compact size allowing it to fit easily into a pocket the ideal sitting aid while out and about.

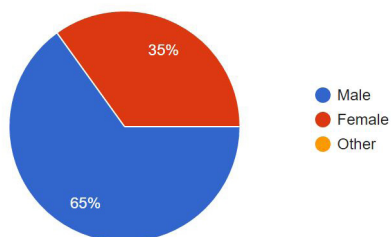
Pylo Loops

To build muscle Alts Athletic Pylo Loops, which come in three resistance levels. Strap them around your thighs or calves and tone your muscles with sit-ups or squats. With just a 24-inch circumference, the bands will take up less space in your suitcase than a pair of dress socks.

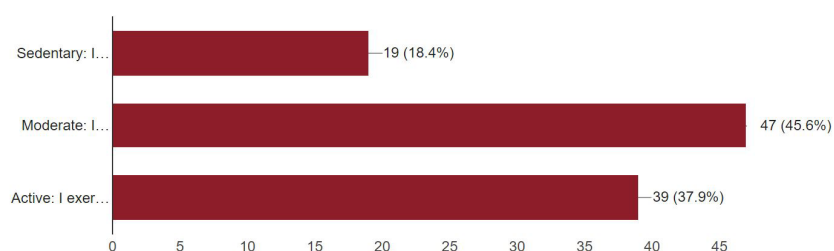


QUESTIONNAIRE

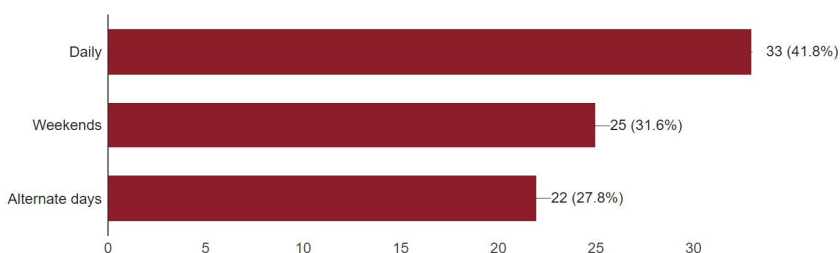
Gender (103 responses)



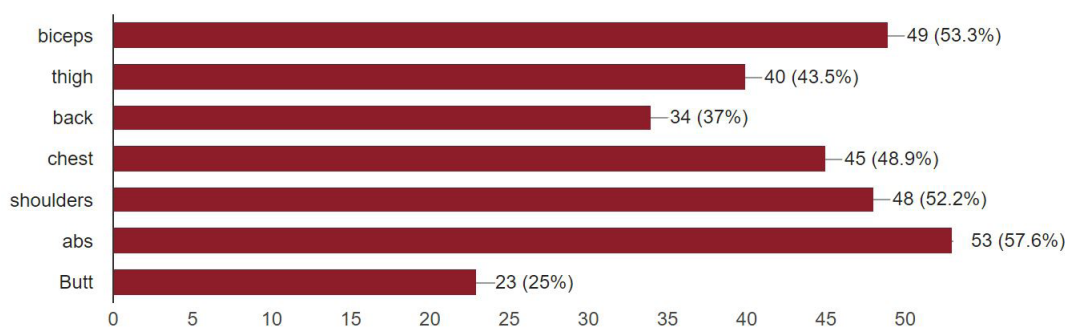
Please describe your lifestyle. (103 responses)



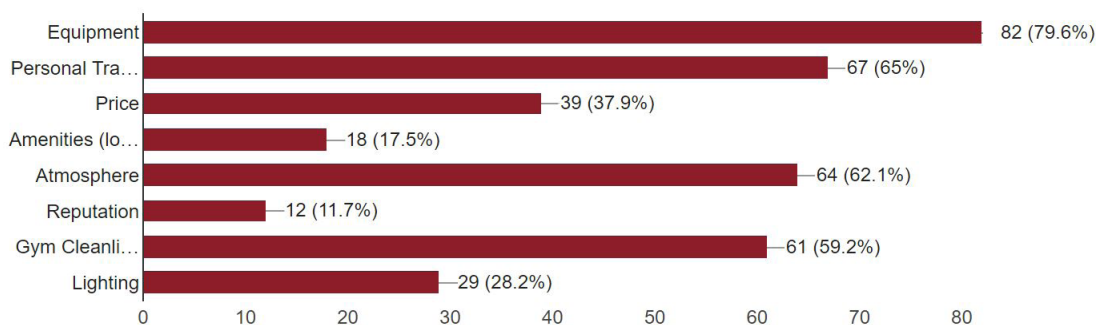
How often do you like to visit the gym? (79 responses)



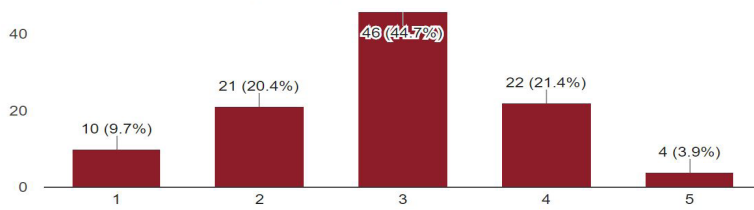
Which muscle do you intend to build? (92 responses)



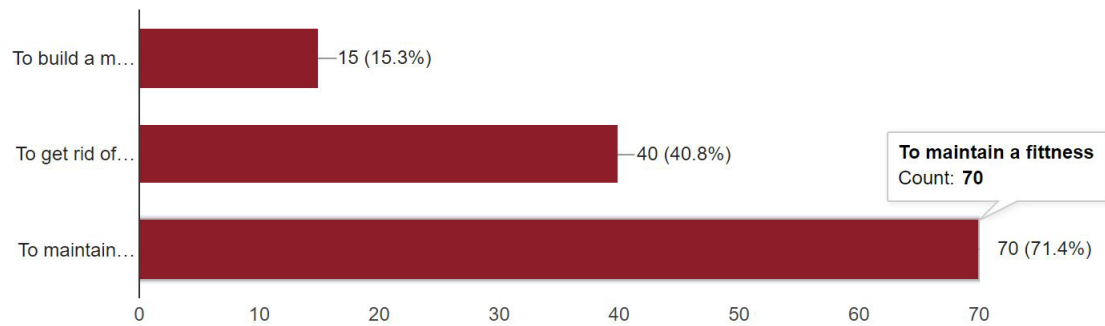
Which of these are important when joining a gym? (103 responses)



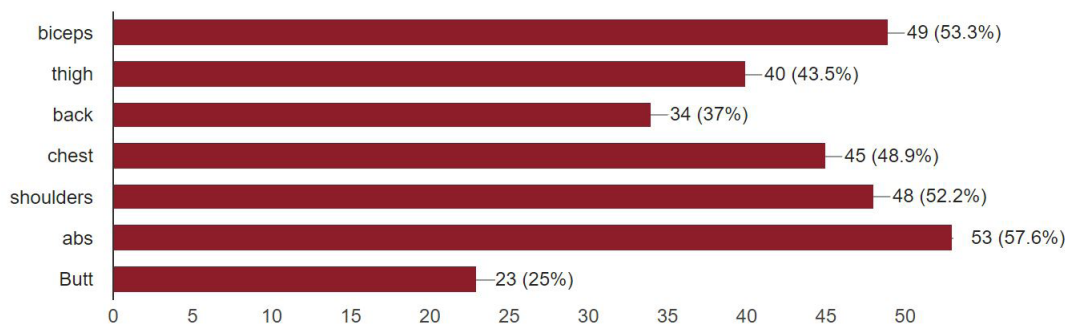
How comfortable are the gym equipment? (103 responses)



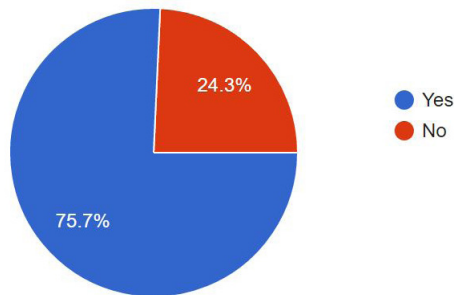
What is your purpose of going to gym? (98 responses)



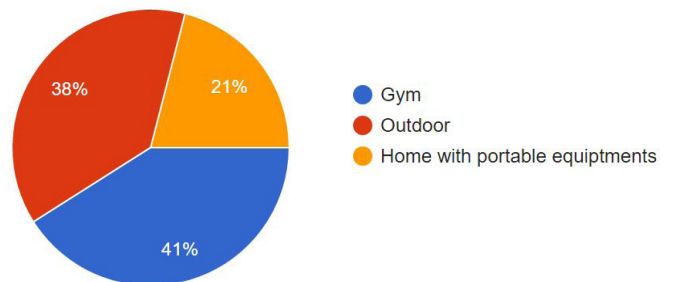
Which muscle do you intend to build? (92 responses)



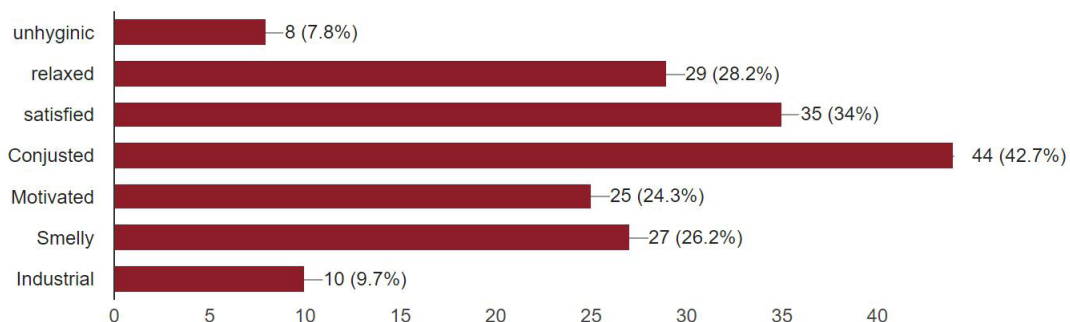
Would you like a portable gym equipment with multiple exercises?



What is the ideal place to workout? (100 responses)



What are your feelings in an indoor gym? (103 responses)





USER EXPERIENCE

ACTIONS

Going to gym
Warming up
Getting motivation
Using different equipments
Sweating while exercising
Giving time for gyming
Schedule of gyming
Waiting for turn
Chance of accident
Listening music
Drinking water
Interaction with trainer
Following the diet
Wearing proper gear
Sweating of body (grip)and hand
Improper weighing (heavy)
Lacking stamina
Stinking smell
Sweat on the machine
Using lockers
Looking at the mirror
Using rubber mats
Stepping on yoga mats
Checking out girls
Disturbances from other guys
Heavy weights left on the floor
Poor instructions
Show off at gym
From where to start
Bullying by other people
Exposing at the gym
Extensive workout
Doing the same exercise repeatedly
Taking steroids
Ignorance by gym trainers

THOUGHTS

Should i go or not.
Opening up muscles.
Just do it, don't give up.
Will it satisfy my purpose.
Feel good, losing more weight.
Should manage other chores.
How much time should i allot.
Why wait, i will lose my stamina.
How do i use this machine.
To avoid stress, to avoid distractions.
Staying hydrated, do not drink too much.
That he gives suggestion.
Uniformity, eating healthy, no junk.
Comfortable, uniform flexibility.
Anxious, show off, more motivated.
Easy to handle, i can do it.
Should i go for another set of exercise.
Hurry to leave, should i go for this or not.
Is it contagious, it may slip.
Personalize space, secure the belonging.
To adore themselves.
Extra grip, more stable, usage.
Make the body more flexible and strong.
Hot bodies, curves, female yet strong.
Rid of them, quicker reply.
Why so careless, no discipline.
Bad company, no knowledge.
Better than other.
Too many thing to do, clutter workout.
If only i was stronger, should i go there.
I got a good figure.
Cut/bull quicker.
For betterment.
Shortcut.
Am i doing something wrong.



FEELINGS

Lazy.

Free, energetic, starting up.

To exercise more, excited.

Insecurity.

Satisfaction, happy, tired, Irritation.

Use the time efficiently, frequently.

Insecure, Confused.

Irritated, Angry, Annoyed.

Scared, Cautious.

Energized, Motivated, Focused.

Pleasure, Satisfied, Energized.

Safe, Learning, Effect, Happy.

Strict, Obey, Controlled

Feel good, Confident.

Feels good.

Embarrassed, Scared, Freak out.

Wasted, hard work needed, Tired.

Dirty, not able to concentrate.

Disgusting, ow.,

Safe, secure, free to go.

Confident, improvements, happy.

Stable, can put more strength.

Annoyed, disgust.

Danger, distraction.

Annoying, irritated.

Trample.

Insufficient, troublesome.

Cool, smart, strength.

Confused, scared.

Anxious, embarrassed.

Flattering, attention seeking.

Tired, faint, loss of energy, heat up.

Monotonous, similar.

Charged, overpowered.

Overruled, bad.

PAINPOINTS

Less interactive environment.

Less space.

No inspiration.

Particular instruction not given.

Clothes stick to the body, itching.

Sometimes the classes gets.

Forgo leisure time.

Loose connectivity, slow process.

Lack of information.

Avoidance of instruction, careless.

Improper water dispenser.



Open Gym is an un-structured opportunity for kids to come to the gym to play and/or work on their gymnastics or tumbling skills in a safe supervised environment. The outdoor fitness equipment and training rig will be an extension of the leisure centre on site and will be activated by trainers to reach out to new groups of people.

The gym also includes:

- An energy spinning bike that harvests human energy and recycles it into mobile phone charging for users.
- A hand bike that can be used by both able bodied users and wheelchair users.
- A recumbent bike that is ideal as a rehabilitation tool.
- A leg press with a large footplate that allows for a variety of foot positions to accommodate a wide variety of exercise variations and users.
- A bench that is more than just any old abs bench and allows a number of exercise variations.
- A lat pulldown / shoulder press that is a clever piece of equipment to work the whole upper body.
- A dips that improves the tone of the upper body in particular arms and shoulders. And a leg raise that improves the core and abdominal strength.

15 pieces of fitness equipment like air walkers and swings, parallel bars, a rowing station, lat pull-ups and pull-downs, leg and arm twisters, leg and chest presses, cross-trainer, horse rider and steppers. "Other than cardio equipment, these machines are capable of exercising all parts of the body

In India children aren't allowed to visit "body-building factories" and women aren't encouraged to "put on muscle". But the response to the OGs indicates that they have encouraged them to get a feel of what various workouts can do to their fitness. Ditto for senior citizens! The fitness regime in an OG is not as restricted as in an indoor gym, and is more open to experimentation. Laser-etched steel instruction plates suffice to guide people in the use of each equipment. Moreover, more people have free access to the fitness infrastructure.



USER BENEFITS

Physical health

- Reduces cardiovascular disease risk
- Builds lean muscle and aerobic fitness
- Improves exercise adherence
- Increases energy

Mental health

- Increases serotonin levels
- Boosts overall mood and well-being
- Improves mental acuity
- Greater feeling of revitalization and positive
- Enjoyment

Social

- Provides opportunities for fitness classes
- Encourages motivation and support
- Attractive to new users and beginners

FACILITY BENEFITS

Attractive

- Recruits new patrons with value-added amenity
- Exhibits facility's commitment to health of patrons
- Provides a new way to exercise

Economic

- Expands amenity offering with low installation costs
- Eliminates costly indoor utility fees
- Provides options for revenue generation through
- Trainers

Diverse

- Encourages a wider variety of users
- Builds positive community equity for facilities



RESEARCH PROCESS



vvv

THE DESIGN COMPREHENSION

arriving at design insights

Permit portability with multiple exercises
(Multi-functional)
Should be simple to use at homes, gyms as
Well as outdoors
Should be of durable material
Should be used for maintaining fitness
Must be easy to clean
Sustainable sweat resistant material
Must tolerate everyday users
Should be ergonomically satisfying
Entertain multipurpose functions.
Should be small and not have hard edges
Should be secure in the shelves
Should not roll away
Acquire less space



THE CHECK

the blueprints of design, a clean plan of action

It should be an equipment which helps you to maintain yourself fit as well as build Muscle. It can be used in any situations such as home, gym, outdoors on a daily basis Specially for weights. It should be made Durable at least for 5 years, the most Important factor of should be taken care of safely. And comfort so the outer material should be smooth as well as having fine grip. The grip extra grip should be provided when there is contact with hands so they know Were to place hands while sweat resistance. It should have an aesthetic apple to Encourage people while, should be affordable for homes many exercises should incorporate this equipment extra grip, stable Approachable and safe to use.



THE CONCEPTS

creating multiple ideas and combining them to general
concepts

Stool bench press

Stool which turns into a bench when the seat is taken out and the legs are extended the seat then becomes the back support of the bench press.

A storage unit+ Gym space

A space in the home for storage when gym equipments are not in use. It has a space to store multiple things.

Outdoor portable and fordable gym

An equipment which allows you to exercise many exercises possible in the gym and can be fordable later to take it to places.

Exercise while sitting

As now a days there are more od sedentary works this product is a roller for the leg which increases the movement of the lover body.

Stand for push/pull up bars

A unique locking mechanism to lock the rod while changing the weights and easy re-move and ready to use system.

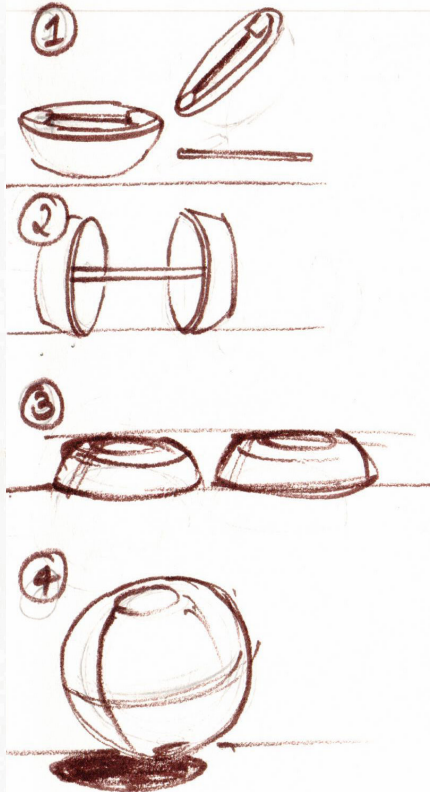
Sensor or info graphics

The interval training is a major period of time to take break for 10 seconds, but sometimes it so happens that other start using the machine which leads to drain of the energy worked out.



CONCEPT 1

In this concept the product is a perfect sphere which turns into a 2 hemisphere by pushing the bottom from either side. After it has open up there will be two spherical handles which allows you to hold the product and start your preferred exercise. Thus making it portable where multiple exercises are possible such as crunches and squats when it a sphere, gliders, push-ups and dumbbells when its a hemisphere.

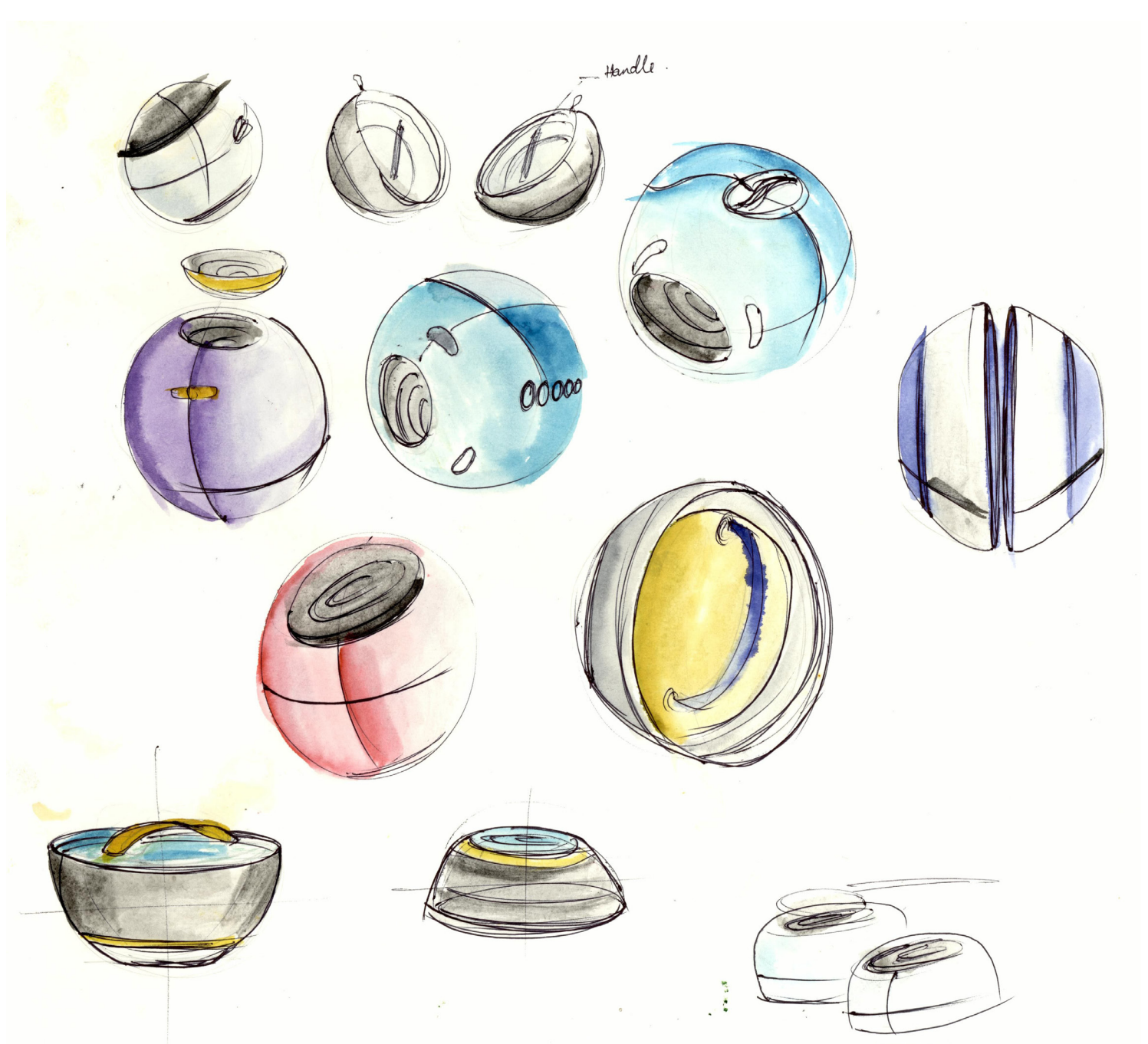


CONCEPT 3

This concept is an extension on concept 1 where there is an additional rod to connect both the weights which leads use to carry double the weights in one go.

CONCEPT 2

Here, the form exploration is shown where the ergonomic factor is considered. Also the use of gliders is taken in mind with a firm grip.



CONCEPT 4

Another factor of dividing the weights, there is a further division in the weights which is detachable according to the needs. In these the techniques of opening the product is shown in different ways such as the magnets, screwing and unscrewing, curve edges and so on..



CONCEPT 5

Concept in this is of an exercise which can be done while sitting, as now a days the work is more of a desk job , this product is to be keep under the desk and foe the exercise of the lower body, the mechanism works like a ball placed in a rigid body, the ball moves according to the feet thus making the thigh move. This is a product considering acupressure.



THE CRAFTING

Making mock-ups, functional prototypes and pilot
production

THERMACOL

The first mock up prototype is carved in thermocol and Mild Steel were used as Handle. The form exploration came up with a curvy joint 'hug joint'. The model was cut at parts using the thermocol cutting machine rest was hand finished with sand paper.

PLASTER OF PARIS

Then dipped it into the PoP and let it dry for one day and sanded again.

WOOD

Log of wood was then carved with the rhino dimensioning, wood was cut through chisel, hammer, jig saw machine and finally sanding machine.

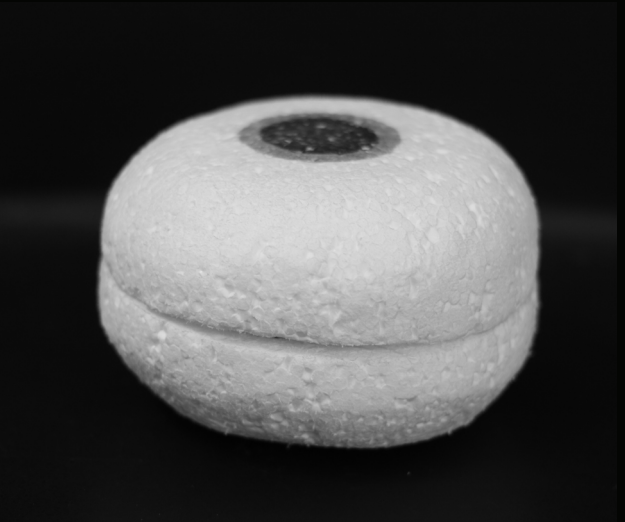
SAND CASING

Cast Iron was replicated into the mold through the method of sand casting.

SAND BUFFING

The final smoothing is given so as to fine the iron grain

SILICON COAT



Various forms explored in thermocol



Dipped into Plaster of Paris



Wood moulds





THE CONNECTION

User Testing and Feedback

Functional exercises

LEGS

front squat
back squat
dumbbell front lunge
dumbbell reverse lunge
dumbbell side lunge
dumbbell step up
standing calf raise

TORSO

Abdominal exercises
Ab-crunch
Machine ball over head reach
Knucle push up

UPPER BODY

Shoulder press
Dumbbell side raise
Dumbbell front raise
Dumbbell rear raise
Bench Press
Vertical chest press
Pec fly
Bent over row
One arm dumbbell row
Seated row
Close grip bench press
Tricep press down
Dumbbell bicep curl
Hammer curls
Barbells curls
Barbell ipright row
Gliders

Compactness

Ultra compact
Fits with itself
Most of the exercises for the day to day users

Aesthetics and Visual appeal

Clear, elegant looking
Colors adaptable
Sensual
Smooth
Curvy
Duality
Balanced
Compact

Semantics

Much reduced fell of a machine, product can be placed between furniture appliances, outdoors and gyms. Will also gel with interiors of the home.

DROP

The prototyping was started by thermocol to explore forms, Plaster of Paris coated to improve the smoothness and make it look and feel strong. To finally cast it in cast iron, the mould was to be made in wood. Then sand casted it by which the volume went up to 5mm. In the end it was sand blacked and painted.

Why drop?

The form is inspired from a sweat drop.
Drop in weight or pressure.
Also attains a very curvy form









FINAL DESIGN

UDITA DAS

National Institute of Design, Vijayawada
Industrial Design
Semester 4

