Actuated Architecture
Intent: The Problem

300,000 deaths each year in the United States are associated with obesity.

Obesity is a medical condition used to describe a high body weight from excess, unwanted, and unhealthy fat. This fat has unfortunate effects on health and leads to reduced life expectancy and increased health problems.

Obesity is a leading preventable cause of death worldwide. In the 21st century, authorities see obesity growing into a massive public health problem.
Intent: The Problem

It is important to look at obesity from an economic standpoint, because obesity even **effects people who do not have this medical condition.**

In 1998, the medical costs that attributed to obesity in the US were $78.5 billion or 9.1% of all medical expenditures. The lifetime medical costs related to diabetes, heart disease, high cholesterol, hypertension, and stroke among the obese are **$10,000 higher than among the non-obese.** Because medical costs are higher for the obese and premiums do not depend on weight, **lighter people in the same pool pay for the food/exercise decisions of the obese.** It is important to have obese prevention programs because they have been found to reduce the cost of obesity-related diseases.

Industries are also effected by rising rates of obesity such as the **airlines with higher fuel costs** and pressure to increase seating width, and restaurants being **accused** of causing obesity.
Intent: The Problem

A sedentary lifestyle plays a significant role in obesity. Worldwide there has been a large shift towards less physically demanding work, and currently at least 60% of the world’s population gets insufficient exercise. This is primarily due to increasing use of mechanized transportation and a greater prevalence of labor-saving technology in the home. In children, there appears to be declines in levels of physical activity due to less walking and physical education. The World Health Organization indicates people worldwide are taking up less active recreational pursuits.

ARCHITECT magazine says “Even if we’re careful about eating healthfully, the best diet in the world can’t make up for a sedentary lifestyle. And boy, are Americans sedentary. We commute—usually by car—to our jobs, which are mostly at desks. But as these graphics show, a surprising amount of activity can be slotted into the average workday. Commuting by foot or bicycle can translate into an hour of calorie-burning, mood-lifting exercise. Moving more while on the job can help, too.”
Problem Statement

How is a person’s behavior affected by architecture?

And furthermore, how does architecture impact a person’s wellness?
Our society makes behavioral decisions every day that may or may not lead to better health. Choosing poor behavioral decisions may eventually lead to obesity, stress, diabetes, depression, and America’s number one killer, heart disease. According to CDC (Centers for Disease Control and Prevention), America’s obesity problem has been increasing in the last 20 years. About every 25 seconds, an American will have a coronary event, and about one American every minute will die from one. Well-designed architecture may benefit our society’s behavior and help our habits to change unconsciously, because healthy habits conserve sustainable human development.
The mere sight of architecture can create a behavioral response. This thesis *seeks* to develop a better *understanding* of architecture’s impact on health and wellness. Architecture can create sensory responses with color, odor, illumination, vibration, etc. This Lifestyle Center doesn’t just provide a program to *promote healthy behavior* but it’s architecture *influences healthy decisions*. 

**Intent: Abstract**
Obesity is the last socially acceptable form of discrimination. Obese people claim to experience invisibility; people do not look them in the eye the same way they would with a thin person, and professional colleagues, in most instances, do not take them as seriously. This in turn becomes an emotional battle. Food indulgence is perpetual and becomes uncontrollable as life confronts them with daily conflict. Slowly, the weight will gain and the disorder often becomes invisible to the over eater.

It is important to recognize this because obese parents are more likely to have obese children. Children are very responsive to the lifestyles and habits of their parents. Children will follow the same dietary and exercise habits of their parents and if they make poor lifestyle choices it encourages their children to follow the same attitudes and behaviors. These behaviors lead to obesity as children that will stay with them into adulthood and will eventually run another vicious cycle.

It is important to address obesity as family matters so that both the adult and child are not devaluing the importance of a healthy, active lifestyle.

Why is this problem important to me?

Dance Instructor and Choreographer at Red River Dance and Performing Company
Research Project in the Fall Semester of 2010
Why Taylors Falls?

Taylors falls carries a certain **character** and spirit. It has a **rich history**. It was an important transportation route for Native Americans and became a route for European Fur Traders. The region of Taylors Falls was also significant for boat building and logging. During the logging era (1837-1893) there were major logging jams due to the narrow gorge. To prevent further catastrophic jams and control water flow, the **Nevers Dam** was built.

Taylors Falls is a place for passer-byes, those in the area for **scenic or active reasons**, and those who pass by because of transportation, both by travel and for a job. Taylors Falls has a **culture of hard working people** and the beauty of the area helps give it an **uplifting spirit**.
Site: Taylors Falls, MN

Taylors Falls is located near many state park and recreation areas which include **scenic boat tours, paths, rock climbing, campgrounds, and canoe & Kayak rentals**. The site is located in the middle of each activity and will also be owned by the state. This will also attract and provide activity for the inhabitants of the program.
The Rock Climber offers a robust representation incorporated into the design. Not only is this suitable for the typology but it is appropriate for the site.
Ideas & Inspiration: Case Studies

Khyber Ridge Residence
Location: Whistler, British Columbia, Canada

This contemporary residence is enclosed in walls of windows, placing it inconspicuously among the trees and mountains. Rock walls really make you feel as though you’re a part of something truly majestic.

Architects: KLab

Location: Lefkada, Greece

This project is a small convention center in the winter months, and switches to become a summer camp for children during the second half of the year.

Architects: Antonio Sofan

Location: Medellin, Colombia

This case study is owned by the state, and is set in a location near state parks.
This model was built to experiment with the layers of a context, the same as the different sedimentary layers of the land.
The form of this building was intended to be elongated with the contours of the land.
Taking the form to the next level I introduced more *vertical elements*. 
The vertical form was pulled from the body, but I was missing the action of “clinging on” like the rock climber.
At midterm this was my idea of a clinging rock climber with possible structural elements that represent the assistance the rock climber gets from his tools. Spatial organization needed to be developed further however.
I Ideas & Inspiration: Process

After moving further into the cliff, this became the final conceptual design.
Final Design
Final Design: Entry Experience

Zig Zag Trail

Funicular Elevator
Final Design: Floor Plans

**First Floor**
- Funicular Landing
- Two Cabins
- One Bathroom
Final Design: Floor Plans

- Second Floor
  - Three Cabins
  - One Bathroom
Final Design: Floor Plans

Third Floor
- Three Cabins
- Mechanical/Storage
- One Bathroom
Final Design: Floor Plans

Fourth Floor
- Two Cabins
- Men’s Washroom
- Women’s Washroom
- Dining Area
- Rock Wall Training
- Cantilevered Balcony
Final Design: Floor Plans

Fifth Floor
- Two Cabins
- Gathering Space
- Studio Workout Space
- Two Bathrooms
- Exploratory
- Rock Wall Viewing
Final Design: Floor Plans

Sixth Floor
- Front Desk
- Health Office
- Two Conference Room
- Faculty Office
- Adult Outdoor Area
Final Design: Floor Plans

Roof Plan
Final Design: Section Analysis

At the Caltrans District 7 Building in Los Angeles, a study found that the open staircase next to a skip-stop elevator is used 3,300% more than the enclosed stairs next to traditional elevators.

By designing a courtyard and viewing deck, sun and air are able to circulate into the center of the building.

The glass stair case provides views to the river.
Final Design: Section & Cantilever Structure
Final Design: Materials

This lifestyle center was designed to fit into the landscape and into the nearby city. Neighboring buildings are made of **stone, wood, and concrete.**
Final Design: Check In
Final Design: Adult Conference Room
Final Design: Exploratory
Final Design: Viewing Deck
Final Design: Rock Wall Viewing & Gathering Area
Thank you for taking your time to come!

Questions & Comments?

“Architecture can get people talking. It can calm children in the classroom, make passive people more active, and shape corporate culture. It can also encourage people to find new paths and discover new aspects of their city—and of themselves.”

~ Kim Herforth Nielsen