

Modes of Interaction

An Analysis of Exercise Equipment at the Indiana University Wildermuth Intramural Center (WIC)

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Comparison of Ellipticals

In the following sections, we will attempt to offer an in-depth analysis of each the Octane Fitness Lateral X Elliptical as well as the Precor Fitness EFX Elliptical. Side by side, these ellipticals are quite similar in both form and function, but specialize in different muscle motions. By careful analysis of individual features, which make up the whole machine, along with user testing and interviewing, we have determined that these two seemingly similar machines interact with the user in drastically different ways. We draw this conclusion by specifically looking at and comparing forms of mapping, affordances / signifiers and constraints found within the machines.

Octane Fitness Lateral X Elliptical



Precor Fitness EFX Elliptical



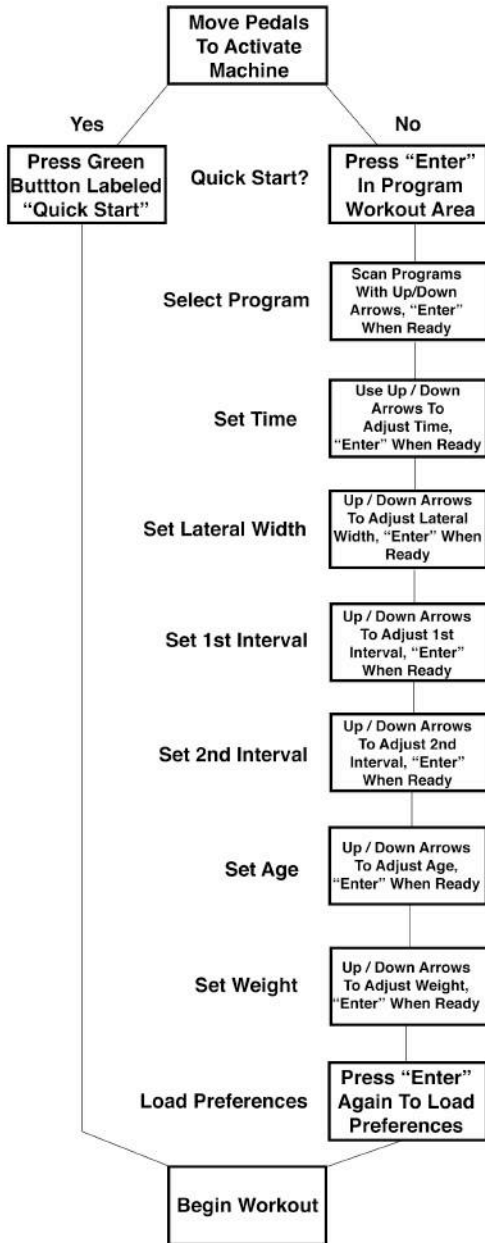
Background

We chose to examine two of the elliptical machines at the Indiana University WIC. Both of these machines are supposed to simulate walking, running, or stair climbing, but without the high-impact joint stress of a regular treadmill or stair machine. Each machine is similar to that of a treadmill in the sense that there is a center console that displays information on the user's distance, calories burned, and has buttons for increasing and decreasing resistance. The difference, however, is that elliptical machines have foot pedals that users use instead of a treadmill, as well as handles that move in accordance with the foot pedals. This allows for much lower impact on a person's legs and upper body, making it an excellent choice for people with injuries or physical rehabilitation patients. Specifically, the Lateral X by Octane boasts, "exercises that challenge the entire body for better conditioning and even better results" through implementation of adjustable lateral movements to the foot pedals (Octane). Likewise, Precor totes a reputation of "smooth, natural, low-impact workouts that help you get results" (Precor).

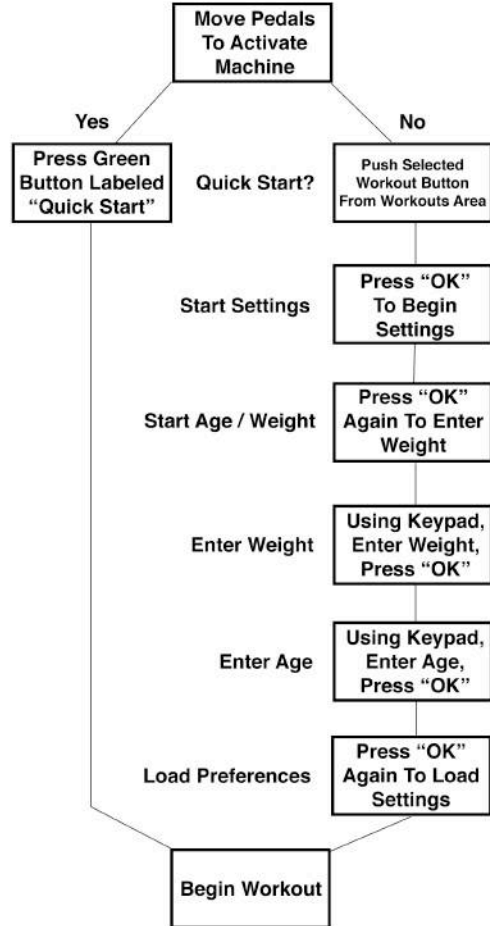
Case Study Analysis

Detailed Mapping Of Elliptical Usage

Octane Fitness Lateral Elliptical



Precor Fitness EFX Elliptical



Affordances / Signifiers, Constraints and Mappings

Affordances

Octane Fitness Elliptical

Good

This picture shows a handle that the user would hold onto while operating the machine. There is a plus button and minus button on the upper left corner. If you hit the plus button then the level of difficulty will increase by one level, and the same for hitting the minus button but the difficulty will decrease by one level. After hitting the button, the screen will provide what level you are currently on. This is a good affordance because the button clearly indicates its function so that someone can intuitively use this piece of equipment with minimal thought.



Bad

After the piece of exercise equipment was made this sign had to be made to explain something that wasn't intuitive in the design. There is a function of the equipment to increase and decrease the lateral of the machine. This sign was most likely made due to the confusion of the meaning of "lateral increase/decrease" to the gym user. The sign had to explain what exactly this function does step by step and with the use of a picture. Although it is clear with the sign, the affordance of the lateral function was poorly designed in the initial creation of this exercise equipment.



Precor Elliptical

Good

Active resistance display is successful in signifying the current resistance level of the machine. While this display signifies resistance it could be made even better if given a scale such as one to ten or a flat road compared to climbing a mountain.



Bad

Large toggle paddles for resistance and elevation. These paddles afford being pushed but feel awkward in the users hand and take a lot of effort to adjust as you need your hand to operate machine but you must remove hand and fidget with the paddle to adjust a setting. This is a bad example of an affordance on the Precor machine.



Constraints

Octane Fitness Elliptical

Good

This is one of the “pedals” on the elliptical. The hood cap where the front of your foot acts as a constraint keeping your foot down on the pedal. It prevents you from jumping if for some reason your foot tries to go up. The elliptical makes you exercise by going in an up and down motion so its possible without the constraint (hood cap) to lose your footing. The grip on the pedal keeps your foot from sliding backwards also to prevent you to lose your footing on the machine.



Bad

This could also work as a bad constraint. The initial use of the hood cap was to keep your foot on the pedal. When someone gets done with the exercise equipment they could forget that their foot is underneath there and want to lift up their foot to step off the machine, which could cause them to trip. This constraint could possibly hurt someone by twisting there ankle or cause them to trip and hit their head on something.



Precor Elliptical

Good

This constraint is similar to the other machine. There are small walls around the pedal to help prevent the foot from coming off. This machine has more of a forward-and-backward motion, so the hood lip to keep the foot from going up isn't as needed as the other machine. So, if the user is going faster to get to a faster speed the raised sides will constrain the user to stay on the pedal so that they are less likely to get harmed. This allows the user not to worry about losing their footing.



Bad

After conversing with the group, we all agreed that the heart monitors on the machine never really work. Even if it we could get them to work, it would be difficult to get your heart rate because the handles with the heart rate sensors are immovable. The Octane elliptical has the heart monitors on the other handles that swing back in forth as you use your machine. The heart monitor requires to keep your hand steady in one spot for a small amount of time in order to get a reading. Thus, it would be easier to keep your hand steady on the handles that move with you instead of the handles that stay in one spot. Plus for these handles you have to bend down so you swing your feet back and forth your hand wants to come up off the handle. This makes it uncomfortable and difficult to get a heart rate during your exercise. These handles constrain you to keep your hands still while everything else is swaying back and forth.



Presence of Mapping?

Both Brands

Good

On each machines display, there is a large green colored button, labeled "Quick Start." These buttons serve as effective forms of mapping because of how it instructs the user to go. This happens because of the color and size of the button. Being green, it appears much like a traffic light telling the user to go. Also being large, it sets itself apart from the other buttons being an effective form of mapping.



Bad

Before attempting to use the machines, a user may notice the lack of any power cord. To turn on the device, a user must first pedal the machine, booting up the display. However, there are no instructions or directions telling a user to move the pedals before beginning. This lack of direction is a poor form of mapping.



Octane Fitness Elliptical

Good

The Octane elliptical comes with an added feature of lateral movement. A user can change the width of the lateral movement they will undergo while using the machine. A good example of mapping comes with how the display shows this lateral width. On the display, a body is shown on the with the corresponding lateral width illuminated below it. This illumination changes as the user changes width settings as well, which is an effective form of mapping.



Ellipticals in the Eyes of the User

An Interview with Alex East and Video Demonstration

Upon analyzing each piece of equipment, our team wanted to gather some information about user thoughts and preference. We reached out to one of the people using the machines and asked if they could analyze each piece of equipment and answer these questions:

Octane Fitness Elliptical Interview

1. Suppose you were a new user, how would you know what to do on this machine?

- Whenever you approach the machine the pedals suggest to stand on them, once standing on the pedals, the way they move signifies that you are supposed to move your legs up and down. Also, there are some diagrams on how to use the machine.

2. What do you think a new user would like about using this elliptical?

- The machine has handles that can assist you while working out. Also, if you would like to adjust the level of resistance, there are buttons straight on the handle. Plus, there is a big Quick Start button to get going.

3. How could this machine be confusing to a new user?

- The machine is pretty self-explanatory, but besides the Quick Start button, some of the other buttons could be somewhat confusing. There are ways to set different workouts and also a screen to view performance, heart rate, etc. so a new user might not understand that right away.

4. What are some of the features you enjoy about this elliptical?

- I like how the handles have buttons for changing the resistance, they are very convenient. The dashboard also has a fan to cool you off when working out. Also, the water bottle holder is great. This elliptical also has the ability to spread out the pedals to get more of a lateral workout in, almost like the motion of ice skating.

[Octane Fitness Elliptical Video Demonstration](http://www.youtube.com/watch?v=KZqmEWjdC7E&t=0m43s)

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Precor Elliptical Interview

1. Suppose you were a new user, how would you know what to do on this machine?

- Like the other elliptical, the pedals give the notion that you should stand on them. Once on the machine, it becomes evident to start running.

2. What do you think a new user would like about using this elliptical?

- The Quick Start button is in plain view and also this elliptical has clear levers to adjust the incline of the elliptical and also the resistance level. Also, the dashboard is very clear with speed, heart rate, muscle groups being used, etc.

3. How could this machine be confusing to a new user?

- The stationary handles on the front are used to read your heart rate. A new user may not know that and not grab them. The previous elliptical had them on the moving handles so a user would intuitively grasp them.

4. What are some of the features you enjoy about this elliptical?

- I enjoy that the levers to adjust resistance and incline are very easy to see and use. The dashboard also has a clear display of what muscles are being used, so if I change the workout, incline, or resistance, the machine will then tell me what muscles I am using with the new settings.

[Precor Elliptical Video Demonstration](http://www.youtube.com/watch?v=KZqmEWjdC7E&t=0m4s)

<http://www.youtube.com/watch?v=KZqmEWjdC7E&t=0m4s>

Conclusion Through Analysis

Though both machines have their strengths and weaknesses, we ultimately decided that the Octane Lateral Elliptical machine was the better exercise machine. The Octane Elliptical was far more intuitive and easy to use than the Precor machine. What was not initially clear on the Octane machine (i.e. how the lateral function worked) was helped by the use of a helpful sign that explained it to the user using easy-to-read text and informative pictures. The Octane utilizes the heart rate monitors better than the Precor, and it has a more efficient and compact design. However, this machine is not perfect. Some improvements we thought of would be to make the heart rate monitor easier to work (our group collectively agreed they never seem to work properly, as discussed earlier). Another improvement would be to make the interface a little more intuitive to use, since many of these kinds of machines have an overwhelming number of options available for the user, so we felt that streamlining the process would be very helpful to the user.

Improvements Based On Conclusions

Octane Fitness Elliptical

- Make heart monitor easier to work
- Make the interface more intuitive
 - I never can figure out all of the settings of the elliptical

Precor Elliptical

- Make heart monitor easier to work
- Reposition heart monitor onto other handles
- Move the cup holder so that it is easier to reach
- Make more holding slots for phone, wallet, etc.
- Make the interface more intuitive

Sources

A. West, Personal Communication, October 9, 2014.

Lateral Ellipticals. (n.d.). Retrieved October 10, 2014, from <https://www.octanefitness.com/commercial/products/lateral-ellipticals/>

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