

Stakeholders, Goals, and Task Analysis

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Team 3: Team ACL

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Stakeholder Analysis

1. Description of Undergraduate Software

Team 3: Team ACL will be designing, developing, and testing an ACL risk calculator for calculating the risk that someone will injure their anterior cruciate ligament (ACL) based on actions they are taking in everyday life. Currently, the scientist, Erich Petushek, is using an app that was made in a previous year of CS4760. Petushek talked about what made the former app have poor useability, and of the other features he hopes to have in the more modern version. This new app will include a form that contains questions based on an individual's actions they take during the day, or during their workout. Once the individual has answered all of the questions, the form will perform a risk assessment of the individual based on the answers to those questions. The risk assessment will tie into an existing system called Qualtrics so that Petushek can continue to use the system he's already used to.

2. Stakeholders

a. Stakeholder Onion Diagram

Figure 1 shows the diagram of the stakeholder onion model from *“Understanding Project Sociology by Modeling Stakeholders”* by Ian Alexander and Suzanna Robertson.

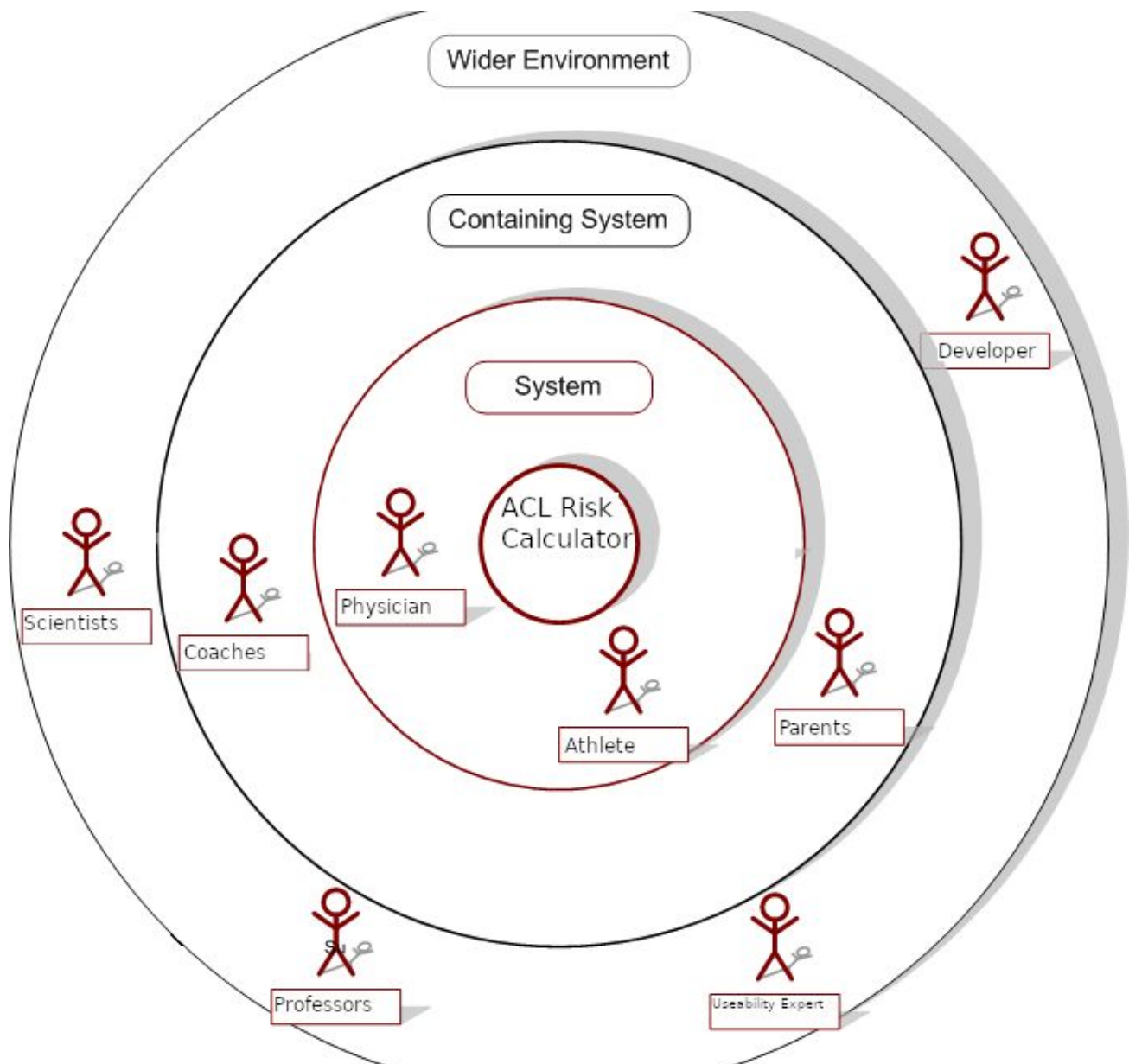


Figure 1: Stakeholder Onion Model for Team ACL.

b. Description of Stakeholders

i. Primary

1. Athletes

- a. These are the people who the risk is being calculated on, either by themselves, their coach, their parents, or their primary physician.

2. Physician

- a. These are the doctors who are testing their patients for risk, and need another tool to help augment their decisions to lower their patients risk for an ACL injury.

ii. Secondary

1. Parents of the Athletes

- a. Parents of athletes are going to be worried for their children, especially if their child has already had an ACL injury. They want to know what they could help with to lower the risk of their child if it's within their control.

2. Coaches

- a. The coaches of these athletes want to make sure that the drills and exercises aren't putting them at unnecessary risk during training/practice.

iii. Tertiary

1. Developers

- a. The developers have a stake in the project because they are the ones making the application. They want to program the software so that they fulfill the requirements from the scientist, and get a good grade in the course

2. Useability Expert

- a. A pair of graduate students that are the user experience consultants during the design and testing phases of the Application. They have no

3. Professors

- a. Professors oversee the developers and user experience experts. The professors credibility is affected by the performance of the Application, both on implementation and user experience.

4. Scientists / Researchers

- a. These are the people doing the research to find out what actions or workouts are most dangerous, and reporting that so that athletes and physicians get the most up to date information. There is no direct involvement in the app, but the researchers are affected by being able to gather new information from the primary users of the application.

3. Stakeholder's Goal Influence Table

Name	Goal	Contributing Influence	Constraining Influence
Athlete	Input data, receive risk calculation	Observations	Interact with the application in a precise and concise manner.
Physician	Input data, receive risk calculation for their patient.	Observations	Interact with the application in a precise and concise manner.
Parent	Check on their child, self education	Child's safety during workout	Interact with the application in a precise and concise manner.
Coach	Check on their athletes, designing safe workouts	Creating safe workout routines, athlete safety	Interact with the application in a precise and concise manner.
Developer	Develop a practical application with good design	Course Credit, development experience	Inexperience and insufficient development time
Useability Expert	Develop and critique developers user experience	Course Credit, user consultant experience	Inexperience and insufficient development time
Professor	To teach students user design and provide a working application to the Product Owners.	Salary / Pay, Credibility is gained for applications that are to specification.	Credibility is hurt by underperforming application
Scientist	View and analyze data	New solutions to lower ACL risk while still training athletes.	Misunderstanding of collected data

4. Stakeholder's Goal Influence Table Description

With the project relying on the input from the athlete's or their physicians, the goal of using the application may vary from person to person. Some may wish to see if they are at risk, while some are trying to decrease their risk by making changes to their routine. However, all of the different goals come together by being able to use this application, no matter the user's technical ability with computers. If the application is too hard to understand, it will be underutilized.

Not all ACL injury researchers will come into contact with this application, but they will all benefit from its implementation. Making it easier to test if you are at risk for an injury, the researchers and scientists can aggregate that information to find new, less risky, workouts and activities while still keeping athletes at peak performance. However, they will be hindered if the implementation of the application is poor. If it's hard to use, less people will be likely to check their ACL risk, giving the researchers even less information than what they were originally.

The developers and usability experts have mostly the same influences both for contributing and constraining. Both parties want to create an application that is up to the specification given by the scientist, which is different than the rest of the stakeholders, as they have no stake in the development process, only the final product. The professor is a supporting role for the developers and usability experts, making sure to keep the team on track, and to catch any user experience errors that the usability experts might have missed.

5. Personas

a. Primary

i. Sarah Johnson

Age: 19

Occupation: Student / Athlete

Languages: English

Sarah is in her freshman year of college at her local university, playing on the basketball team. Every day after class she goes to practice and weight training to keep her stamina up. She may not be thinking about whether she is at risk for a traumatic knee injury, as her workout is mostly decided by her coach. Sarah has grown up around technology, so filling out an online form would be easy.

ii. Alica Rightclearly

Age: 59

Occupation: Physician

Languages: English

Alica has been a local physician for almost 30 years, attending to both the local college athletes and families in the area. She's seen plenty of ACL injuries in her day, but doesn't always know how they're caused, as all of her patients may do different sports or activities to damage them. If she could learn of the risky activities that may cause injuries in the first place, she could advise other patients. She's used her work computer to fill out most of her simple paperwork over the years, so filling out an online form should be easy.

b. Secondary

i. Mark Johnson

Age: 56

Occupation: Former Athlete / Father

Languages: English

Mark is the father of Sarah Johnson, an athlete at the local university. Back when he was in college, he played on his university's basketball team, and watched some of his teammates go out for the season due to knee injuries. Since this is his daughters first year on a university team, he wants to make sure that she doesn't get injured with the more rigorous workout routine. He's used computers at his job and owns a smartphone, so filling out an online survey should be easy.

ii. Mike Adams

Age: 48

Occupation: University Basketball Coach

Languages: English

Mike has been the basketball coach at the local university for the last 13 years, after leaving the NBA when he was 35. He's used to rigorous training routines to get ready for NBA games, and has had to get used to toning back his workouts for the new team members. He's seen plenty of knee injuries on the court, and knows of some of the workouts to avoid. However, he wants to make sure that the rest of his workouts are safe for his team, as replacements are harder to find than in the NBA. Mike has used a computer to lookup statistics of basketball players, so filling out an online form should be easy for him.

6. Simplified Hierarchical Task Analysis (HTA)

a. Normal User Pages

- i. Generic Information about ACL injuries, and what to avoid.
- ii. Login by Athlete ID
 1. Fill out new form
 - a. Survey page: Input data about your workout and life
 - b. Confirm Submission of data
 - c. Redirect to feedback page
 2. Feedback page
 - a. Risk based on a per question / per question group
 - i. Suggestions to lower risk
 - b. Overall risk based on all questions
 - i. Graphical: Where you rank over everyone else
 - c. Overall Suggestions to lower risk

b. Scientist / Researcher Pages

- i. Athlete information would go directly into Qualtrics for the scientists use.

7. Summary of the Simplified Hierarchical Task Analysis

This application is not complicated in its construction, as the users only have a few pages to navigate through, and the scientist view should be directly through the Qualtrics view that they are used too, just with more data.

Generic Information Page

This page would be the landing page for the application. It would inform the user of what it takes to have a knee injury and some of the more dangerous activities / workouts that cause ACL tears. This would allow people completely new to the thought of ACL injuries to bring them up to speed on what muscle is in danger, the impact it would have on your mobility if it were to be injured, and a link to test your own personal risk of the injury.

Login by Athlete ID

The athlete would be given a number during registration that would allow them to come back and look at their progress and to input a new survey about their recent activities.

Fill Out New Form

This will be the page a user will use to complete the task of inputting their information into this system for a risk calculation. This will be a simple form with text entry and drop down boxes, with a submit button at the bottom.

Feedback Page

This page is where a user would get redirected to after inputting their information in to the survey and pressing submit. This is where the risk calculation of their questions would happen, as well as where the suggestions would be shown to lower the risk of it happening in the future. Also on this page would be a graphical representation of their data. This could be where they rank in risk among other recent submissions, or their risk versus the average risk.

8. Notes from the Scientist Meetings.

Below you will find a copy of the notes from the undergrad's meeting with the scientist, Erich Petushek.

Team Name: Team ACL

Scientist: Erich Petushek

Destination: Harold Meese Building Rm 206 (In Person)

Meeting Time: 1/23/2019 at 3:30pm (Duration 22 minutes)

Attendance:

Erich Petushek (scientist)
 Lynn Chen (Grad student)
 Kirstin Burns
 Daniel Carrara
 Lindsey Kuzich
 Lynde Oddo
 Jacob Van't Hof
 Emily Winkleman

Discussion Items:

May we audio record this meeting? Yes

What are your general expectations?

Create a website that is the risk calculator that has a feedback page that displays results to person. In addition, great if website built in a way that communicates with another website survey so that the results can be pushed or taken or shared to cross reference survey data with the website we create. A way for an identifier to be put in the URL, URL used by different website (survey). Qualtrix ? is a survey platform for his research. Test effects of various displays of calculator. Multiple displays affects understanding and motivation levels of users. Various risk factors, sex, sports played, injuries, age, etc. They get results page- what the risk calculator says, let's say 1 in 20 for that age range. Outcome of the risk information passed to Qualtrix survey. Whether they enter it first then our survey or vice versa is up for debate. Create awesome interface to fill out form and get risk results. Number two that it can play ball with Qualtrix.

Qualtrics

Do you have any graphical design ideas?

He will send an example of typical risk calculators. Thinks they don't do a good job of communicating risk, fill out and it says 20%. What does that mean? From whom to whom? Of what? That's where we come in to make a clarified calculator.

More graphical or Numerical?

Proportion or through time, relative to other people, etc. Test around and find a way that is easily understood by people.

What is the data like? How is it formatted?

The form isn't relying on previous information- the data is what is provided in the form. This info might push the identifier ID and data to Qualtrics.

Who is the targeted audience?

It could be predominantly anyone with ACL injuries, like athletes or parents of athletes. Other people utilize is physicians, pre-participation in sports physical often covers stuff like this could be used. Not little kids using this. They don't start having issues until middle school/high school so it's not common.

Are we storing user data and responses?

If someone lands on page, they won't have identifying information on the form page. Right now since it's part of a research project, just have it pass to Qualtrics. For future use if we find a good interface later ... no use to store the data. Good to have specific items in the form data and results data get pushed to Qualtrics.

What are the complexity of the survey? It is our understanding that it already exist.

Given questions, not complex at all.

Equation determining risk will be given to us. Will we be given data beforehand? We'll have the algorithm that gives output of the risk score. Some other students are working on the algorithm so it is close but fictitious. The actual formula will be done by the end of the semester.

Background Knowledge to know that helps?

Any information about risk communication would be helpful. Data visualization, might be better to graphically display rather than numerically.

Project done in the past:

It hasn't been done- there was a project that had a form to identify best practice characteristics for preventing ACL injuries. That interface wasn't great. Some usability issues and also; implemented the same thing but using Qualtrics. They had a form then a feedback page based on the form and it was functional but not usable and not according to the preferences of the individuals.

Qualtrics; it's difficult to create the feedback page with the risk communication on it. It's probably possible but it; it would definitely be possible if just a numerical display of risk but since graphical is better it can't do that easily.

Why do we need to implement survey?

It may work depending on how easy or hard the integration is. It would be nice to have it as its own standalone website. Qualtrics is expensive. University working on getting a subscription for it. Hasn't happened. We can sit down and look at it together later. We can call and talk to people there. He will since information that he has gathered.

The other workaround for integration would be people just input their risk value into Qualtrics by hand; have them redirect to website then go back to survey. If data can't pass they can enter it themselves (users).