

**Project Title / Name:** Vader

**Team Name:** Bacta Before

**Team Lead:** Garrett Peake

**Problems:**

There are currently many problems with PT:

1. PT is boring and hard to keep up consistently in outpatient care
2. Running out of medication can completely stop PT
3. Given slow recovery times PT is hard to consistently track and observe results leading to loss of hope
4. Doctors have limited experience and therefore each provides a different outlook
5. Patients can lose insurance coverage restricting possibilities of care

Garrett's brother is in physical therapy due to a car accident restricting bodily use from the waist down. He's encountered many issues including loss of hope, running out of medication, inability to accurately track progress without a medical professional, inability to continue inpatient care due to insurance coverage, and getting wildly different recovery outlooks from different doctors. All of these problems tie back to the centralization of physical therapy to inpatient or doctor-reliant care and a single centralized solution that allows outpatient, self-administered, informed care would allow any patient to recover better.

There are currently companion apps that enable patients to accurately track things and report to healthcare provider. These apps do solve the initial

progress-showcasing problem but don't have the ability to provide informed outcome insights nor do they make physical therapy more accessible. There are also apps that enable virtual reality games incorporating your PT regimen to make it more enjoyable, but these require specialized hardware and are therefore inaccessible to many. The other issues of losing medical coverage, tracking prescription refills, and accessible gamification are not currently solved in the PT context.

The target outcome of the project is to allow users to track and gamify their PT, receive calculated outcome predictions, and provide useful insights on exercises that would normally all only be possible with a physician. The MVP for this would be a tracking app that does basic linear regression to provide outcomes as well as a simple gamification through a points system. Further upgrades would include AI search enabling user cohorting to provide realistic best-case scenarios as well as a more complex game that the user might care to work for.

We'll use basic development technologies such as git as a version control, Github as a repository and Kanban board system, and agile development practices to perform continuous work. Given our experience we plan on using serverless technologies such as Cloudflare Workers or AWS Lambda and React or Svelte on the frontend to create a cross platform application. If we were to use machine learning we would use TensorFlow or PyTorch to perform training and predictions.