



Injury Aware Workout Planner

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IS492 Spring 2026

GitHub repo link: <https://github.com/IS492-SP26/team-project-injury-aware-workout-planner>

Problem & Motivation

What human problem?

People recovering from knee or shoulder injuries often want to continue exercising, but they lack clear guidance on how to safely adapt their full-body workouts. Physical therapy focuses on the injured area, while fitness apps prioritize performance, leaving a gap in everyday, injury-aware training support and increasing the risk of reinjury.

Who experiences it?

- Recreational athletes
- College students who train at the gym
- People returning to activity after injury

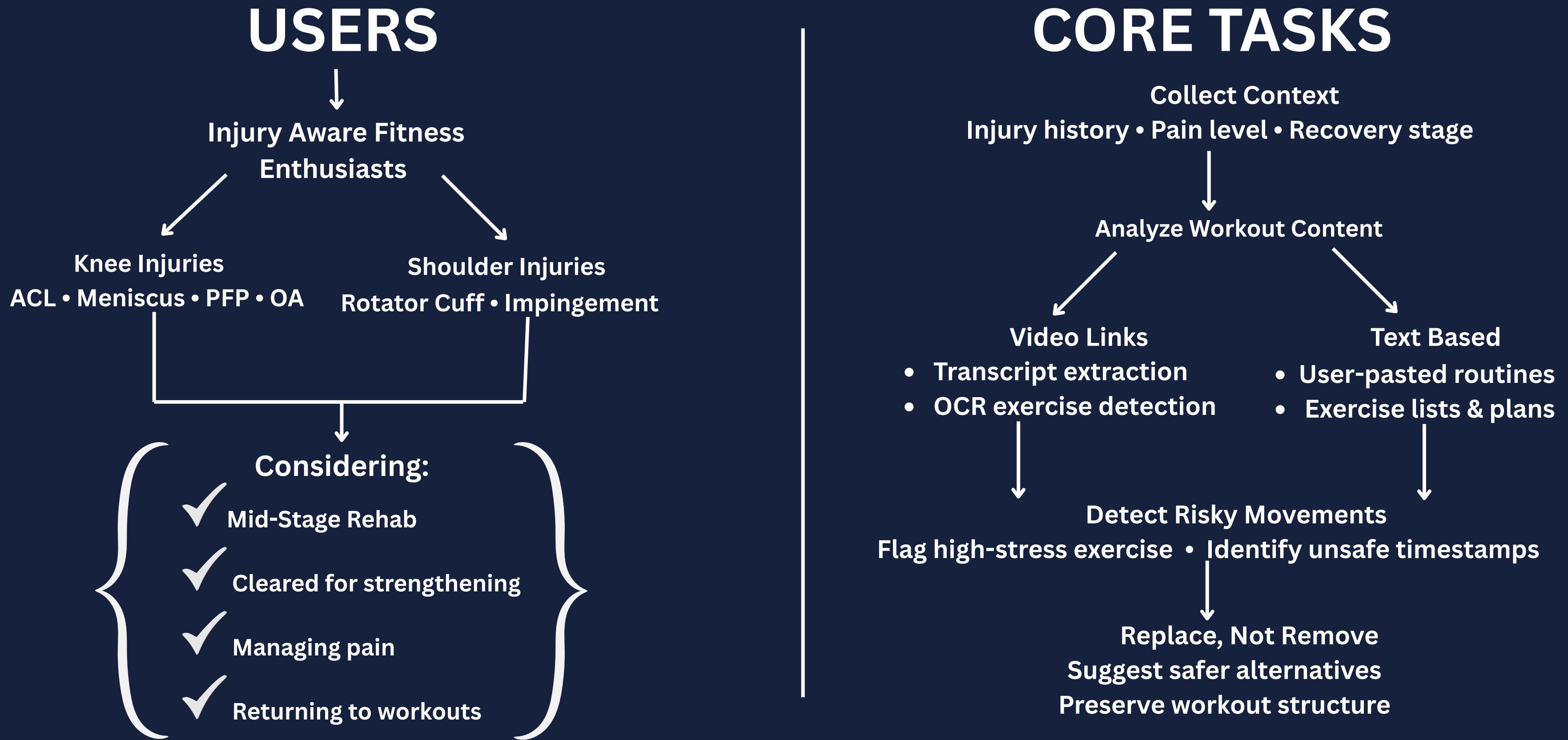
Why does this matter now?

Scale: Musculoskeletal injuries are common, especially knee and shoulder injuries.

Urgency: An improper return to training increases the risk of reinjury.

AI relevance: AI can personalize workouts—but most systems optimize performance rather than safety. There is an opportunity to build injury-aware adaptive training support.

Target Users & Core Tasks



Existing Tools & Gaps

Ray (Live AI Trainer)

Focus

Real-time feedback & dynamic adjustments

Strengths

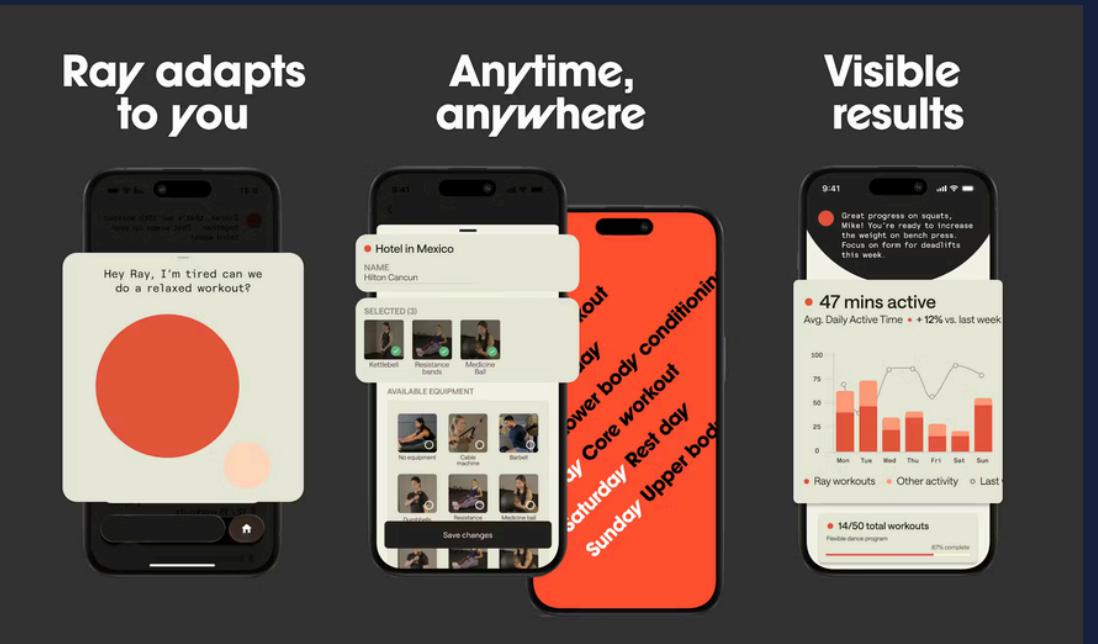
- **Hands-free** voice interaction
- Computer vision (CV) rep tracking

Limitations

No rehab/injury safety; fixed content

Key Gap

Cannot surgically modify existing workout videos.



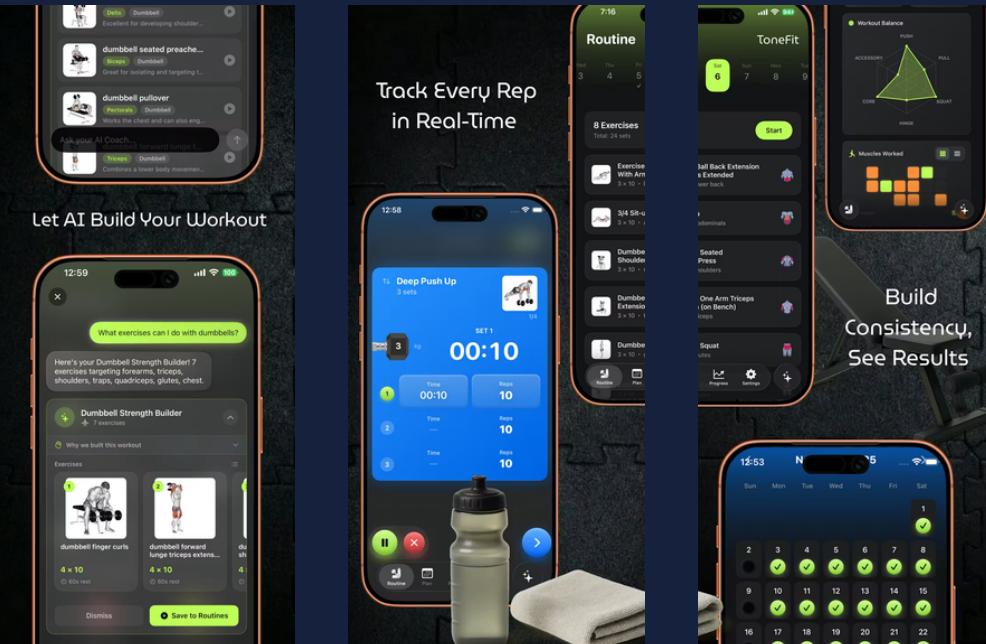
ToneFit (AI Planner)

Structured long-term training plans

- Context-aware plan generation
- Progress logging & tracking

Only text & image; no animated instructions

Focuses on planning, not dynamic video editing.



GAP

Modify existing content / generate plans based on a user's **specific injury profile**

Key Insights from Literature

Ocean

- Structured rehab-stage evaluation is important in injury-specific risk rules making.
- A keyframe-based movement segmentation pipeline is useful in video parsing.

Emma

- Reinjury risk increases without structured, injury-aware progression.
- The key gap lies in adapting full-body training to injury context.

Vinit

- Structured progression is essential in knee injury recovery.
- Most systems generate new workouts instead of modifying what users already follow.

Prisha

- Personalization is not about generating more content but giving the right context.
- Hallucinations in high risk scenarios can be difficult to handle.

Initial Concept & Value Proposition

CORE IDEA

An injury-aware system that analyzes a YouTube workout and flags exercises that may be unsafe for a specific injury, then suggests a safer substitute.

We focus on 6 injuries (knee and shoulder) and use the following to guide decisions:

- Injury type
- Time since injury
- Pain level
- User notes

Key Differentiators

Not a regular Chatbot fitness App

Work with your fav fitness influencers

Not a static “avoid this injury list”

Interprets messy input, exercise names

Context like recovery stage and pain level

Generates clear substitute explanations

Unique Value GenAI Brings

Milestones, Roles & Next Steps

Roles

Problem statement - Emma

Competitive landscape - Ocean

Target Users & Core Tasks - Vinit

Initial Concept & Value Proposition - Prisha

Next Steps

Design User Screening Questions

Turn Video into text-format transcripts

Design prompts

What Will Be Validated in Checkpoint 2

1. Whether existing GenAI tools can:
 - a. Correctly identify risky exercises from transcripts
 - b. Adjust advice based on injury stage and pain level
 - c. Provide specific substitutes rather than vague guidance
2. Clear gap analysis from structured prompting
3. Refined product requirements
4. DESIGN_SPEC + lightweight prototype

