

# Injury Aware Workout Planner

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

# Problem & Motivation

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## 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?

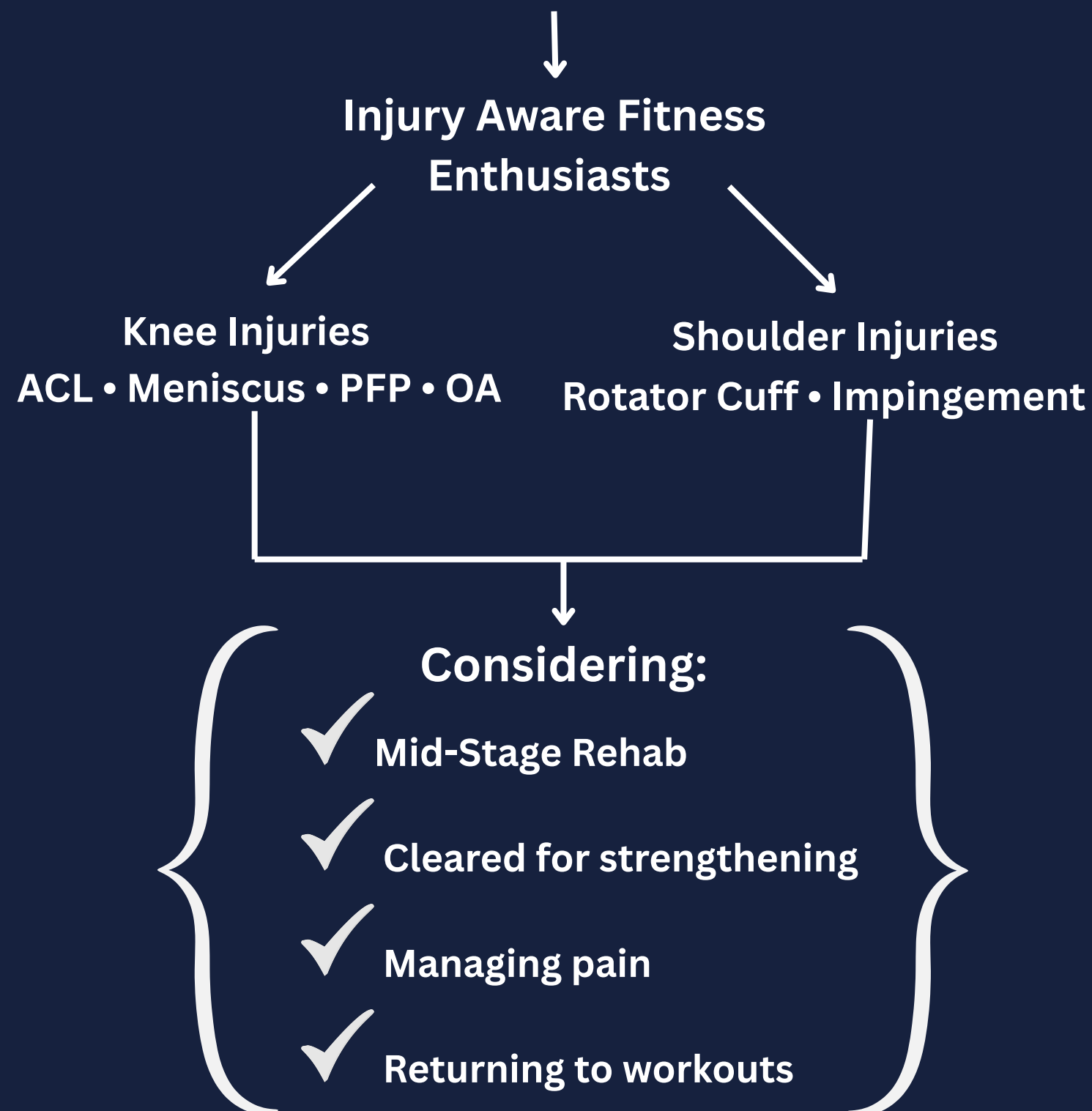
**Scale:** Musculoskeletal injuries are common, especially knee and shoulder injuries.

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

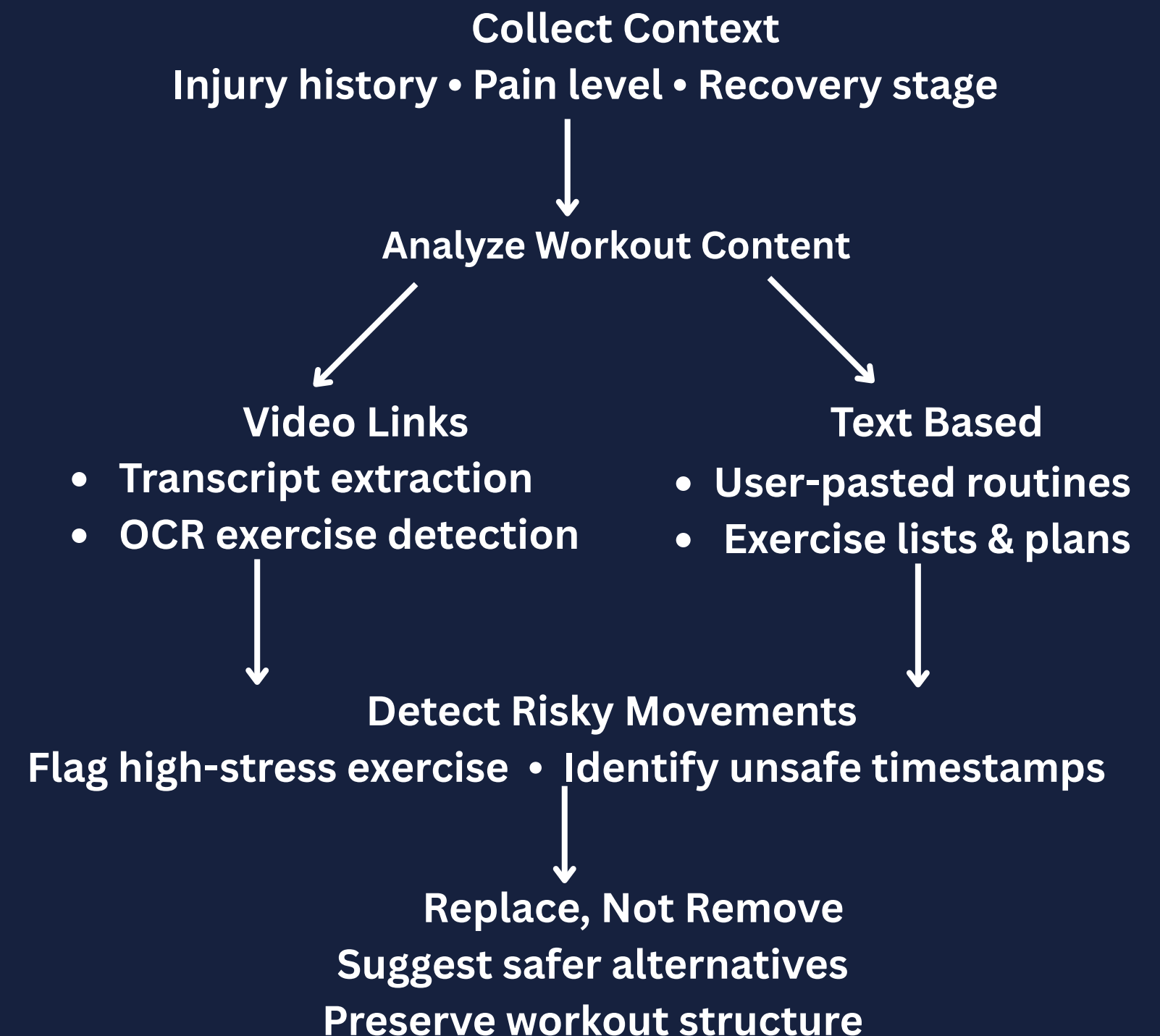
**AI relevance:** AI can personalize workouts—but most systems optimize performance rather than safety. There is an opportunity to build injury-aware adaptive training support.

# Target Users & Core Tasks

## USERS



## CORE TASKS



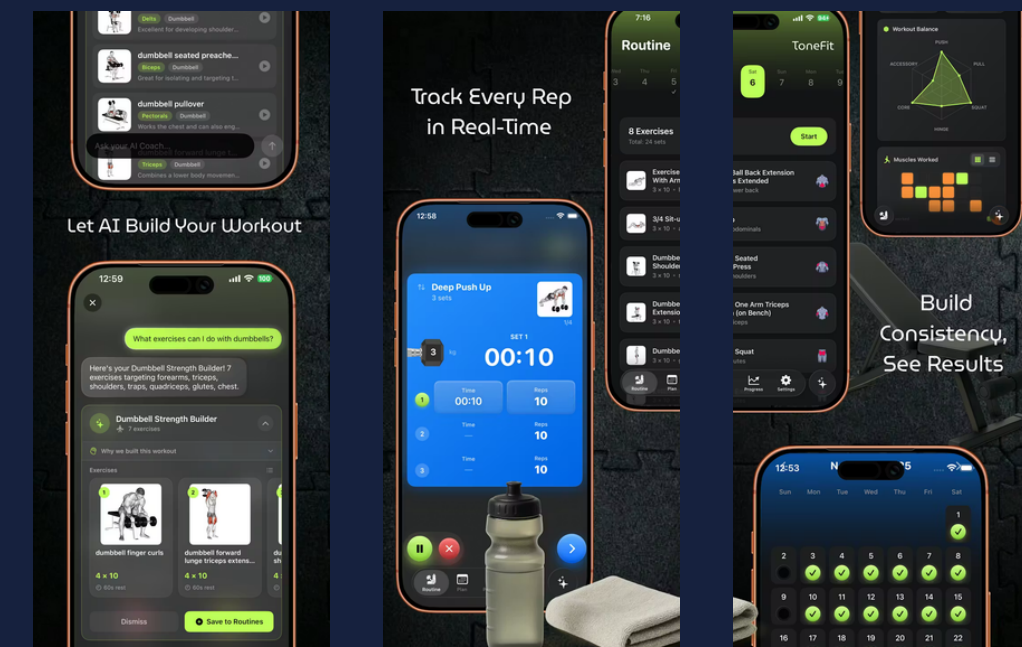
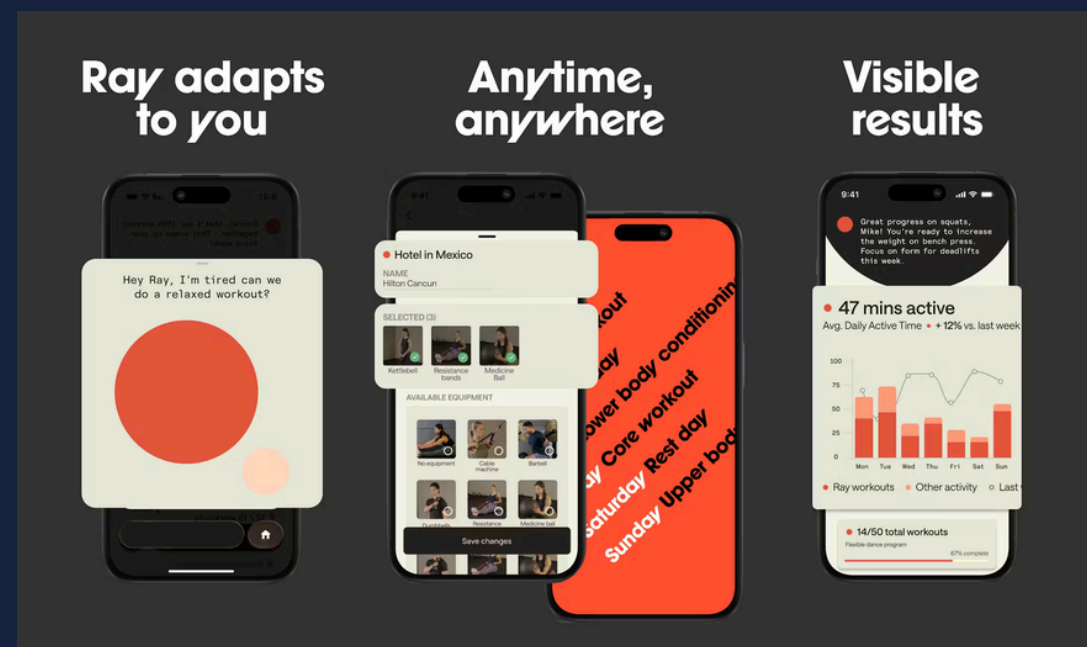
# Existing Tools & Gaps

## Ray (Live AI Trainer)

Focus	Real-time feedback & dynamic adjustments
Strengths	<ul style="list-style-type: none"><li>• <b>Hands-free</b> voice interaction</li><li>• Computer vision (CV) rep tracking</li></ul>
Limitations	No rehab/injury safety; fixed content
Key Gap	Cannot surgically modify existing workout videos.

## ToneFit (AI Planner)

Focus	Structured long-term training plans
Strengths	<ul style="list-style-type: none"><li>• Context-aware plan generation</li><li>• Progress logging &amp; tracking</li></ul>
Limitations	Only text & image; no animated instructions
Key Gap	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

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## 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

