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HOW MACHINE LEARNING POWERS RUNWISE AI'S INJURY PREDICTIONS

- **The Skilled Detective (The Model):**
 - Imagine RunWise AI's machine learning model as a highly skilled detective, a specialist in solving the mystery of running injuries.
 - This detective has spent years studying a vast library of "case files" (labeled training data). Each file contains:
 - **The Clues (Input Features):** 12 crucial pieces of information about the runner: volume (e.g. mileage), intensity (e.g. pace), and consistency over different periods of time.
 - **The Outcome (Labels):** The resolution of the case – whether the runner sustained an injury or remained injury-free.

- **Investigating the Patterns (Model Training):**
 - The detective meticulously analyzes the case files, searching for subtle connections and patterns in the clues that might lead to injuries.
 - The detective asks questions like:
 - "Does a sudden spike in running volume consistently appear in cases with injuries?"
 - "Is a runner with consistently high-intensity workouts more likely to end up injured?"
 - "Does inconsistent training, with large fluctuations in weekly mileage, correlate with increased injury risk?"



- Through intensive investigations, the detective develops a keen sense of which clues are most significant and how they relate to each other. The detective refines the investigative techniques (the model's internal calculations) to become increasingly accurate in predicting injury risk.

- **Solving a New Case (Inference):**
 - Now, when a new runner comes along with a set of 12 clues, the detective gets to work.
 - The detective carefully examines the runner's volume, intensity, and consistency, comparing them to the patterns learned from past cases.
 - In other words, the detective is taking the 12 clues and running them through a process that the detective has learned to use to determine the most likely outcome.
 - Based on expertise, the detective provides a risk assessment: "Based on the evidence, this runner has a [HIGH/MEDIUM/LOW] probability of sustaining an injury."

- **Key Takeaways:**
 - The model, like the detective, relies on the analysis of evidence (data) to draw conclusions.
 - The model identifies patterns and relationships that might be difficult for humans to see.
 - The accuracy of the model's prediction depends on the quality and quantity of the training data.

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