Modelling and Prediction of Athletic Readiness based On Sleep and Recovery Patterns

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A. Progress Summary

1) Work Completed

- Imputed RSI values based on weekly data.
- Imputed other values using MICE excluding RSI.
- Took the first athlete dataset, performed preprocessing, and started learning patterns from it.
- Reviewed performance of Ridge and LightGBM models to identify potential improvements.
- Compared multiple imputed datasets to select the most suitable one for training.
- Explored various augmentation techniques to generate synthetic data.

2) Milestones Achieved

- Completed a second round of preprocessing and feature inspection.
- Ridge regression identified as the top-performing model, followed by LightGBM.
- Best imputed dataset chosen based on model results.

B. Challenges & Resolutions

1) Problems Faced

- Difficulty in choosing a consistent imputation method due to varying model responses.
- Challenge in generating realistic synthetic data that improves performance.
- Overfitting observed in some models, especially with limited data.

2) Resolutions & Actions Taken

- Dataset versions tested using model accuracy to guide imputation choice.
- Different augmentation methods analyzed for effectiveness and applicability.

C. Upcoming Tasks

1) Tasks Planned

- Will finalize the most effective augmentation strategy for generating synthetic data.
- Will re-train models using the augmented dataset to evaluate impact on performance.