This research paper explores the application of Explainable Artificial Intelligence (XAI) in predicting outcomes of matches in the Brazilian Volleyball League (SuperLiga). The focus is on addressing the interpretability challenge posed by black-box Deep Neural Networks (DNNs) commonly used in sports predictions. The two-phased XAI approach involves using interpretable rule-based models (Boolean Rule Column Generation and Logistic Regression) in the first phase and constructing non-linear models (Support Vector Machine and Deep Neural Network) in the second phase.

**Key Findings:**

1. Black-box models (SVM, Neural Network) outperform white-box models (Boolean Rule Column Generation and Logistic Regression) in terms of predictive accuracy (measured by Accuracy, F1-Score, and AUC-ROC).

2. The SVM model provides the most accurate predictions among all models.

3. Post-hoc explanations are constructed using ProtoDash (for finding prototypical examples) and SHapley Additive exPlanations (SHAP, a game-theoretic approach).

4. ProtoDash provides prototypical examples similar to the match in question, offering an intuitive understanding of the underlying characteristics.

5. SHAP explanations reveal the contribution of individual features to the model's predictions, aiding interpretability.

**Implementation Implications:**

1. Model Selection: Consider using black-box models like SVM or Neural Networks for sports outcome predictions due to their superior accuracy.

2.Explanations: Implement post-hoc explanation methods such as SHAP and ProtoDash to provide interpretable insights into the model's predictions.

3.Feature Importance: Pay attention to features highlighted by SHAP explanations, as they indicate the contribution of each feature to the model's decision.

4. Prototypical Examples: Use ProtoDash to find prototypical examples that represent the distribution of the dataset, aiding in understanding the characteristics of specific predictions.

5. Meta-Learning: Explore meta-learning methods to improve model performance by leveraging knowledge across different sports leagues or sports types.

This approach enhances the transparency of sports outcome predictions, making it valuable for decision-makers in sports analytics, coaching staff, and individuals involved in sports betting decisions.