Power Rating System

Definitions

Rating is the system/formula that analyzes the results of competitions to provide a numerical representation (out to 4 decimal points) of competitive strength.

Ranking is the placement of teams using the teams rating number. Teams may be ranked for the whole state or by division.

Win /Loss is the result of the final score.

Margin of Victory (MOV)

> ➢ MOV is the difference between the number of points scored by the winning team and the number of points scored by the losing team

> ➢ MOV can be set with a cap, taking into consideration sportsmanship and the likely scores for the given sport

> ➢ MOV awards winning team with more points for a larger win but does not reward in excess of the MOV cap

> ➢ MOV awards the losing team with more points for being within the margin of victory and does not penalize for being outside the MOV cap

Strength of Schedule (SOS) is the rank of the average opponents' rating relative to all other teams

Iteration For rating purposes, set all the team value based on variables you can calculate what the new rating would be using this value. Then you should continue to calculate the new ratings based on the old ratings, until the numbers associated with the variables stop changing. As these numbers have stopped changing, you have the number association with each team that solves the rating formula and these numbers are the ratings for the respective teams.

Own Value is the average of your win/loss Margin of Victory.

Opponent Value is the average of opponent rating number which includes opponents' win/loss Margin of Victory.

Own Value + Opponents' Value = Team's Overall Rating

The Formula

The approved rating formula is very simple and also transparent. The benchmark is Win/Loss, Margin of Victory, and Strength of Schedule. <u>League and division do not factor into the rating formula.</u>

How does it work? Here's the math...

The rating formula uses the variables of Win/Loss, MOV, and SOS and produces a rating through iteration. Take an initial round of results, enter them back into the formula, and then run them again and again. Do it enough times, and eventually it gets to the point where there is little/no change to the numbers and you have your "answer" in the form of power ratings.

Why is Margin of Victory important?

In the MIAA we have leagues varying in number of teams, number of divisions and strength of teams. Most MIAA schools do not create schedules independently but are provided a league schedule for each sport. If a school is in a league where there is a large and small conference break out, cross over games add to the difficulty of a fair rating formula. The differing status of leagues within the MIAA structure can pose challenges to fair and equitable rating of teams.

Margin of Victory (MOV) is a consistent factor used to develop a fair comparison of the very different leagues across the state. The Margin of Victory gives a linear factor that is consistent across the state. By capping the point differential sport by sport, it removes the motivation of coaches to run up the score and still gives us a quality rating formula.

TMC has set the following Margin of Victory points by sport to be utilized in the Power Rating formula.

- ➢ Sports are grouped by outcomes in final score results

- ➢ Margins are set to take into consideration sportsmanship while still keeping the power rating formula fair and transparent

- ➢ Margins are set in line with the charge of the BOD to TMC on consistency

Margin of Victory Points by Sport

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 3 point Margin of Victory: Soccer, Hockey, Field Hockey
 5 point Margin of Victory: Baseball, Softball
10 point Margin of Victory: Basketball, Lacrosse
14 point Margin of Victory: Rugby, Football
 3 games/matches Margin of Victory: Tennis, Volleyball (not individual game score)
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Out of State Opponents in the Power Rating Formula

All games played before the cutoff date will count in the power rating formula.

Examples:
MIAA Team A plays out of state Team B and Team B only plays one MIAA opponent.
MIAA Team A rating will be the result against that opponent equal to MIAA team rating.

MIAA Team A wins in soccer 3-0
Team A is awarded +3 points
If Team A loses 3-0
Team A is awarded -3 points

If out of state Team B plays multiple MIAA teams it will be assigned a rating number.

Example:
Out of state Team B plays 5 MIAA teams in a holiday basketball tournament.
All 5 MIAA teams' ratings will use the results of win/loss and out of state Team B rating points based on all games played.

Based on the power rating formula, out state opponents are treated as another data point to compare all the teams in the state.

The fact that an opponent may be an out of state opponent has no adverse effect on the power rating system.

How Does a Forfeit Factor into the Power Rating

If a team forfeits to another team during the regular season, the maximum amount of MOV points, as assigned by each sport, will be used as the rating value for that scheduled game.

Using Soccer as an example:

Team A forfeited to Team B
Team A will receive a point value of -3 points, the maximum MOV
Team B will receive a point value of +3 points, the maximum MOV

Covid Protocol

If a team's Covid protocol prevents a regular season scheduled game from being rescheduled and cannot be played, it will be a no-contest and no points for power rating will be awarded.

Every effort should be made to make up these games on the first available date.

If a team who fails to reach the 50% qualifying factor because of scheduled games not being played because of Covid, they may apply for a waiver to the seeding committee.

Examples of Team's Overall Rating

Using basketball as an example:

<u>Team A</u> and <u>Team B</u> each play a game against <u>Team C</u> and <u>Team D</u>

<u>Team A:</u> wins by 15 vs <u>Team C</u>; loses by 1 vs <u>Team D</u>
<u>Team B:</u> wins by 1 vs <u>Team C</u>; wins by 1 vs <u>Team D</u>

Team A's margin for those two games = 10* + (-1) = 9
Team B's margin for those two games = 1 + 1 = 2
scoring margin cap reached for this game

The "eye test", probably would tell you that Team A was a little better overall in those two games than Team B. Yet Team B was 2-0 in those games, and Team A 1-1.

The power ratings are designed to give you a true value of all teams in comparison to all others. Using that example above, Team A is a slightly better team than Team B (relative to those two opponents).

The Math

With about 3,000 games played in Basketball each winter, the rating formula uses the variables of Win/Loss, MOV, and SOS from each game played and produces a rating through iteration.