

XC-SPI Method at a Glance

Version 2.7 quick reference

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1. Question

Which teams currently have the strongest **expected NCAA championship scoring profile** after accounting for who is actually on the roster and, once racing begins, what the race context says about athlete performance? Expected score is the primary power-ranking target; title probability is a separate output.

2. Week 0

The preseason is a roster-adjusted index, not a fitted probability model:

$$C_i = c_i X_i + (1 - c_i) 200, \quad PS_j = \sum_{k=1}^5 C_{j(k)} + .05[(C_{j6} - C_{j5})_+ + (C_{j7} - C_{j5})_+].$$

c_i is an Confidence weight, not an availability probability. The second term is a depth-**fragility** penalty, not actual NCAA displacement scoring. Preseason Score is not expected NCAA points.

3. Historical Success

Postmodern Era (Super-Shoe Era onward): 2020 forward.⁵ Compare Team Score, Front Runner, Fifth Runner, and Depth Gap with next-season NCAA outcomes. Report Historical Title, Podium, Top-10, and Top-20 rates. Historical Success Rank is primarily the podium ordering. Historical Title Odds normalize raw title rates within the displayed Top 25; they are not full current-athlete Championship Odds.

4. During the Season

Athlete ability evolves with elapsed time:

$$\eta_{it} \sim N(0, \sigma_\eta^2 \Delta t).$$

Observed race time is modeled as athlete ability plus distance, course, weather/ground context, race effect, a team-day shared shock, and individual noise. Uncertain context increases observation uncertainty and therefore reduces how strongly a race updates the athlete.

5. Conditions

Common additive weather/course effects help normalize historical races but cancel when every athlete is projected into the same future championship. To let difficult conditions affect upset risk, residual variance may depend on heat, mud, wind, and technicality. Athlete-specific condition effects are added only if repeated historical evidence supports them.

6. NCAA Scoring

The simulator keeps raw overall finish for the individual race and a separate NCAA scoring sequence for teams. Individual qualifiers, incomplete-team runners, and runners beyond a complete team's seventh are removed from the team-scoring sequence. Five score; six and seven displace; ties use the NCAA scorer-by-scorer rule.¹

7. Outputs

Publish expected score, median score, expected team place, intervals, and—only after calibration—title/podium/top-10 probabilities. The model does not equate “best expected score” with “highest probability of winning.”

8. Simulation Precision

Monte Carlo runs in batches until published quantities meet precision tolerances. $MCSE(\hat{p}) = \sqrt{\hat{p}(1 - \hat{p})/M}$. Longshots also require acceptable relative precision/minimum simulated event counts.

9. Validation Rule

No complexity is protected. Course, weather/ground, track prior, dynamic state, team-day correlation, or condition-dependent variance must improve chronological held-out performance or calibrated uncertainty. Title-probability calibration uses a longer multi-season NCAA archive; one held-out championship is insufficient.

10. Odds Status

The former Preseason Score-to-lognormal Week 0 probability bridge is retired. Historical Title Odds are now permitted as clearly labeled Postmodern Era benchmark prices. Full current-model fair prices return only when the athlete-level championship simulation has passed its calibration gate. Odds/EV/Kelly formulas remain arithmetic translations once a defensible p exists.

References

- [1] National Collegiate Athletic Association. Cross Country and Track and Field Playing Rules. Accessed August 28, 2026. <https://www.ncaa.org/championships/playing-rules/cross-country-track-and-field-playing-rules/>
- [2] Durbin J, Koopman SJ. *Time Series Analysis by State Space Methods*. 2nd ed. Oxford University Press; 2012.
- [3] Gelman A, Hill J. *Data Analysis Using Regression and Multilevel/Hierarchical Models*. Cambridge University Press; 2007.
- [4] Wood SN. *Generalized Additive Models: An Introduction With R*. 2nd ed. Chapman & Hall/CRC; 2017.
- [5] Caso CC. *XC-SPI Postmodern Era Historical Success Model: Super-Shoe Era onward, 2020–2025 team-profile persistence, 2026 success rates, and historical title odds*. Oklahoma State University; 2026.