

Preregistration

Companion to the Week 6 episode. Write your plan down, publicly, before you collect data.

1. The one idea

Specify your hypothesis, design, primary outcome and analysis in a **public, time-stamped** record **before** collecting data. It converts your confirmatory test from "trust me, this was the plan" into "here's the dated proof of what I planned." Simple, often free, hugely credibility-boosting.

2. The problem it solves — researcher degrees of freedom

In a normal analysis you face dozens of defensible choices (which outliers to drop, which outcome, which covariates, when to stop). Made *while looking at the data*, nudging toward "significant", they inflate the false-positive rate from ~5% to ~**60%+** (Simmons, Nelson & Simonsohn, 2011). Not dishonesty — **flexibility + a peek is a false-positive engine** ("the garden of forking paths", Gelman).

Sport example: test the intervention on sprint time (nothing) → jump height (nothing) → just the forwards (significant!) → drop the two who were ill (very significant!). Report *that* as the plan and you've p-hacked — and it felt like diligence.

3. Prediction vs postdiction (Nosek et al., 2018)

Prediction (before data) Risks being wrong. If it holds, it's impressive — the world could have contradicted you and didn't.

Postdiction (after data) A story that fits what already happened. Cheap — there's always one. Presenting it as a prediction inflates apparent credibility.

Preregistration **timestamps your predictions** — protecting you from your *own* hindsight bias (after seeing a result, it's almost impossible to remember how surprised you'd have been).

4. What to preregister

☐ Hypothesis (directional, from theory)	☐ Primary outcome (the one that decides it)
☐ Design & comparison	☐ Sample size + justification (Week 7)
☐ Exact analysis plan	☐ Exclusion & stopping rules

☐ Confirmatory vs exploratory split — clearly labelled

Lodge on the **Open Science Framework (OSF)** or **AsPredicted** (free). The "**21-word solution**" (Simmons et al.): state that you report how N was determined, and *all* exclusions, conditions, and measures.

5. Registered Reports (Chambers, ~2013; urged for sport by Caldwell et al., 2020)

Stage 1 — before data	Stage 2 — after data
Submit intro + hypotheses + full method. Reviewers judge the question & design . Pass → in-principle acceptance .	Execute the plan; the paper is published regardless of the results .

Why it's powerful: a well-designed *null* publishes with equal status → **decapitates publication bias** (Week 1) and removes the p-hacking incentive. A growing number of sport journals offer them.

6. "Doesn't it kill exploration?" — no

Preregistration **protects** exploration by naming it. Explore freely; just **label** confirmatory (predicted, tested once) vs exploratory (discovered — a hypothesis for next time). Both reported and valued. You only lose the freedom to *misrepresent a discovery as a prediction*.

7. Do this — this week

Write a preregistration

For the study you've built: fill the §4 checklist *before* any data — hypothesis, primary outcome, design, analysis, exclusion/stopping rules, and the confirmatory/exploratory split. Even for yourself (dated) it sharpens the study; ideally lodge it on the OSF (free). For an important study, look into a **Registered Report** — the single strongest thing you can do for trustworthiness.

References

- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology. *Psychological Science*, 22(11), 1359–1366.
- Nosek, B. A., Ebersole, C. R., DeHaven, A. C., & Mellor, D. T. (2018). The preregistration revolution. *PNAS*, 115(11), 2600–2606.
- Chambers, C. D. (2013). Registered Reports: a new publishing initiative at Cortex. *Cortex*, 49(3), 609–610.
- Caldwell, A. R., et al. (2020). Moving sport and exercise science forward. *Sports Medicine*, 50(3), 449–459.

