

1 **A Supplementary Material for Reproducibility**

2 This appendix section provides detailed information about reproducing research process.

3 **A.1 Build Hypothesis**

4 Liner's Hypothesis Generator Agent was used to pick the topic and develop the hypothesis for the
5 paper. The initial directives were:

6 “ Scoring dynamics in sports insist that the scoring process is not just like Bernoulli process. Is it
7 possible to prove? ”

8 From the numerous hypotheses generated, I chose the following one and made minor adjustments to
9 develop a specific research question.

10 “ Sports scoring dynamics that deviate from Bernoulli independence reflect individual-specific latent
11 performance states rather than direct causal dependencies between scoring events: athletes transition
12 between discrete performance states (Low/Medium/High effectiveness) according to individual-
13 specific transition matrices that evolve on sport-specific temporal scales, with scoring probabilities
14 determined by current state and contextual variables, while apparent temporal dependencies emerge
15 from state persistence governed by individual baseline effectiveness parameters rather than event-to-
16 event causation, testable through formal model comparison where state-dependent models should
17 exhibit superior out-of-sample prediction accuracy and physiological state correlates should validate
18 inferred performance transitions. ”

19 Details about the selected hypothesis and other candidates can be found in the following link:
20 <https://getliner.com/agent/hypothesis-generator/3cf28d55-13fa-4cec-8667-6b632141bfe7>

21 **A.2 Proof Hypothesis & Research Design**

22 I used Liner's Deep Research to cross-validate the hypothesis and, based on these results, further
23 refined and concretized it. Since I planned to conduct experiments through Cursor, I also utilized
24 Liner's Deep Research to generate a Research Design Document tailored for Cursor input prompts.

25 Details about hypothesis proofing and refining process on Liner's Deep Research can be found in
26 Question 1, 2 & 3 at the following link: [https://getliner.com/search/s/26521240/t/87356473?msg-](https://getliner.com/search/s/26521240/t/87356473?msg-entry-type=main)
27 [entry-type=main](https://getliner.com/search/s/26521240/t/87356473?msg-entry-type=main)

28 **A.3 Experiment**

29 The experiments were conducted using Cursor with Anthropic's Claude Sonnet 3.7 through LLM API
30 calls. Because of debugging difficulties and Cursor's existing constraints, the actual experiments
31 were reduced in scope from the initial design. I performed numerous iterations of code generation,
32 execution, and debugging cycles, utilizing the previously created PRD to direct the agent.

33 Details about prompts and chats can be found in the 'prompts' folder in Supplementary Materials
34 archive.

35 Details about experiment source code for reproduce experiments process can be found in the 'source-
36 code' folder in Supplementary Materials archive.

37 **A.4 Writing & Revision**

38 The preliminary manuscript and figures were created using Cursor with Anthropic's Claude Sonnet
39 3.7, Liner's Deep Research, and Anthropic's Claude Sonnet 4.

40 Details about drafting the Introduction and Related Works sections through Liner's Deep Research
41 can be found in Questions 4, 5 & 6 at the following link:

42 <https://getliner.com/search/s/26521240/t/87356473?msg-entry-type=main>.

43 Conversations with Cursor using Anthropic's Claude Sonnet 3.7 for figure creation and drafting the
44 Method, Results, and Conclusion sections can be found in the 'prompts' folder in the Supplementary
45 Materials archive.

46 Subsequently, I utilized Liner’s Peer Review Agent to produce reviews of the manuscript. These
47 reviews, together with the draft, were fed to the Cursor with Claude Sonnet 3.7 for feedback
48 integration.

49 Details about review results using Liner’s Peer Review Agent can be found in the following link:
50 <https://getliner.com/en/agent/peer-review/695a0aaa-ac6f-42ae-b0ab-07c5bccceb97>

51 Conversations with Cursor using Anthropic’s Claude Sonnet 3.7 for revision can be also found in the
52 ‘prompts’ folder in the Supplementary Materials archive.

53 Lastly, citations were incorporated into the paper through Liner’s Citation Recommender. Due to
54 character limitations of the tools used, citation recommendations were obtained section by section.
55 The recommended citations were exported in APA format and then converted to BibTeX format using
56 instructions given to the Cursor. The converted BibTeX entries were used to directly add citations to
57 the main text.

58 Details about citation recommendation results using Liner’s Citation Recommender Agent can be
59 found in the following links:

60 <https://getliner.com/agent/citation-recommender/912a5b21-b5bf-4c42-a149-74da2cedf412>

61 <https://getliner.com/agent/citation-recommender/b6c983ee-64ae-4e54-a332-e8675a7266df>

62 <https://getliner.com/agent/citation-recommender/c3c7fb5c-50ed-4603-9e5e-b020a5d1a5e9>

63 **A.5 Disclaimer**

64 As the human author is Korean, the prompts fed to AI agents were predominantly written in Korean
65 initially. I have translated and extracted their essential information here to provide clear insight into
66 the generation process.