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Development of a Cognitive–Physical Dual-Task Intervention Package and Its Effectiveness on Evidence Rate (Evidence Accumulation Speed) in Adolescent Girls

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1. Round 1

1.1. Reviewer 1

Reviewer:

The paragraph introduces broad empirical findings on dual-task training but does not clearly specify the mechanistic relevance of these findings to adolescents. You may strengthen the paragraph by explicitly explaining how the cited adult neuroplasticity findings translate—or may not translate—to the developmental period of adolescence, which is your study's focus.

The aim is stated clearly, but the introduction does not provide a specific hypothesis (e.g., "the intervention will significantly reduce perseverative and total errors"). Adding hypothesis statements would align the paper with standard experimental reporting guidelines.

Convenience sampling followed by random assignment may introduce sampling biases. Please clarify whether any inclusion/exclusion criteria were applied (e.g., physical health status, cognitive impairment, sports participation) to improve replicability and internal validity.

The test description is very detailed, but the operationalization of "evidence accumulation rate" is unclear. WCST errors (perseverative, total) are indirect measures of cognitive flexibility—not direct accumulation-rate parameters. The manuscript should explicitly justify how these specific WCST indices map onto evidence accumulation theory.

Table 1 is very comprehensive, but the manuscript does not describe how progression criteria were determined (e.g., why intensity increases from 65% to 82% HRmax). Adding justification (developmental appropriateness, exercise science guidelines) would improve transparency and scientific rigor.

The manuscript should specify (a) the demographic characteristics of the pilot participants, (b) what specific deficiencies were found, and (c) what modifications were implemented. Without this clarification, the role of the pilot study remains vague.

Authors uploaded the revised manuscript.

1.2. Reviewer 2

Reviewer:

The definition of evidence accumulation is accurate but conceptually dense. Consider adding a brief, intuitive example (e.g., "accumulating information while deciding under uncertainty") to help readers from applied psychology fields better connect this construct to the WCST task used in the study.

This statement cites general physiological mechanisms, but the manuscript should clarify which of these mechanisms are hypothesized to be most relevant to the reductions in perseverative and total errors specifically. A short theoretical linkage between neurotrophic changes and improved WCST performance would increase conceptual precision.

The paragraph cites Mehri-Nejad et al. (2021) regarding cognitive complications following anesthesia, which is a clinical context. The manuscript should explicitly justify why findings from this clinical population are transferable to healthy adolescents and the context of physical–cognitive training.

Although repeated measures ANOVA was used, the manuscript does not report whether assumptions such as normality and outliers were checked. Please include tests (e.g., Shapiro–Wilk, Q–Q plots) or describe how violations were handled.

The standard deviations differ considerably between time points and groups (e.g., experimental group perseverative errors SD = 3.32 at pre-test vs. 3.91 at follow-up). You may need to comment on whether heterogeneity of variance over time affects repeated-measures reliability.

Authors uploaded the revised manuscript.

2. Revised

Editor's decision after revisions: Accepted.

Editor in Chief's decision: Accepted.

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