

Youth Sports to Alzheimer's Prevention: Integrating OLA Findings with Exercise-Related Brain Mechanisms

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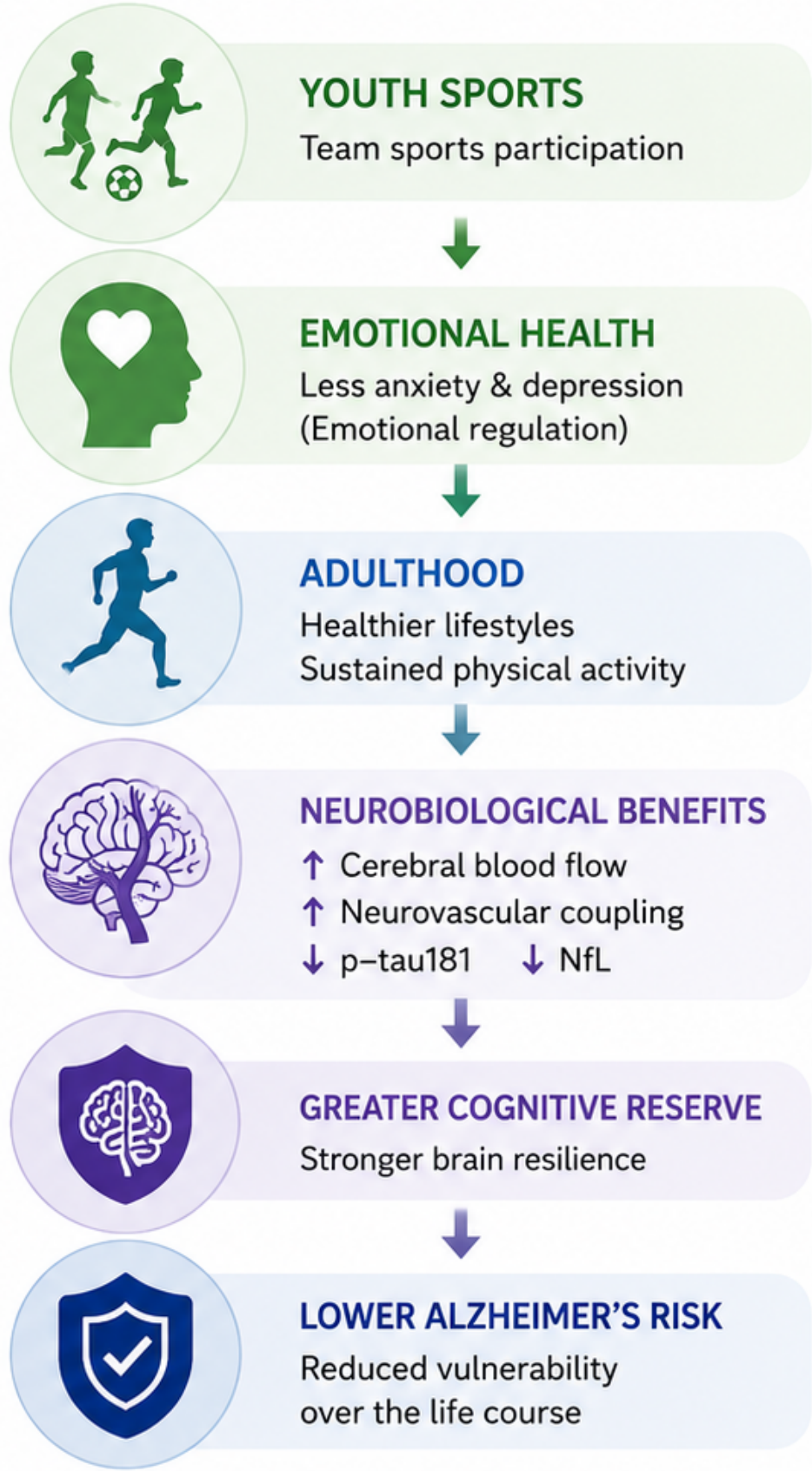
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INTRODUCTION

Physical activity across the life course is one of the most powerful modifiable factors for preventing Alzheimer's disease.

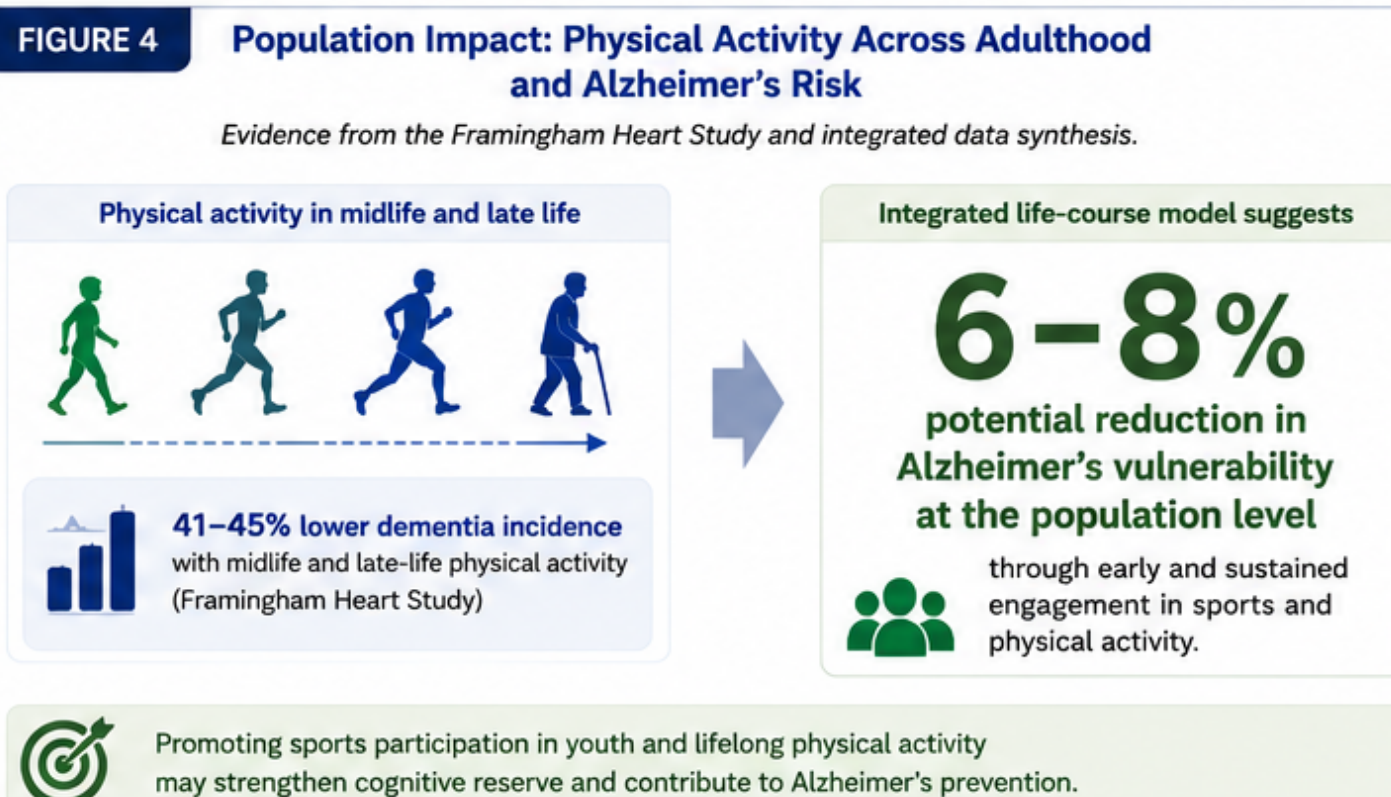
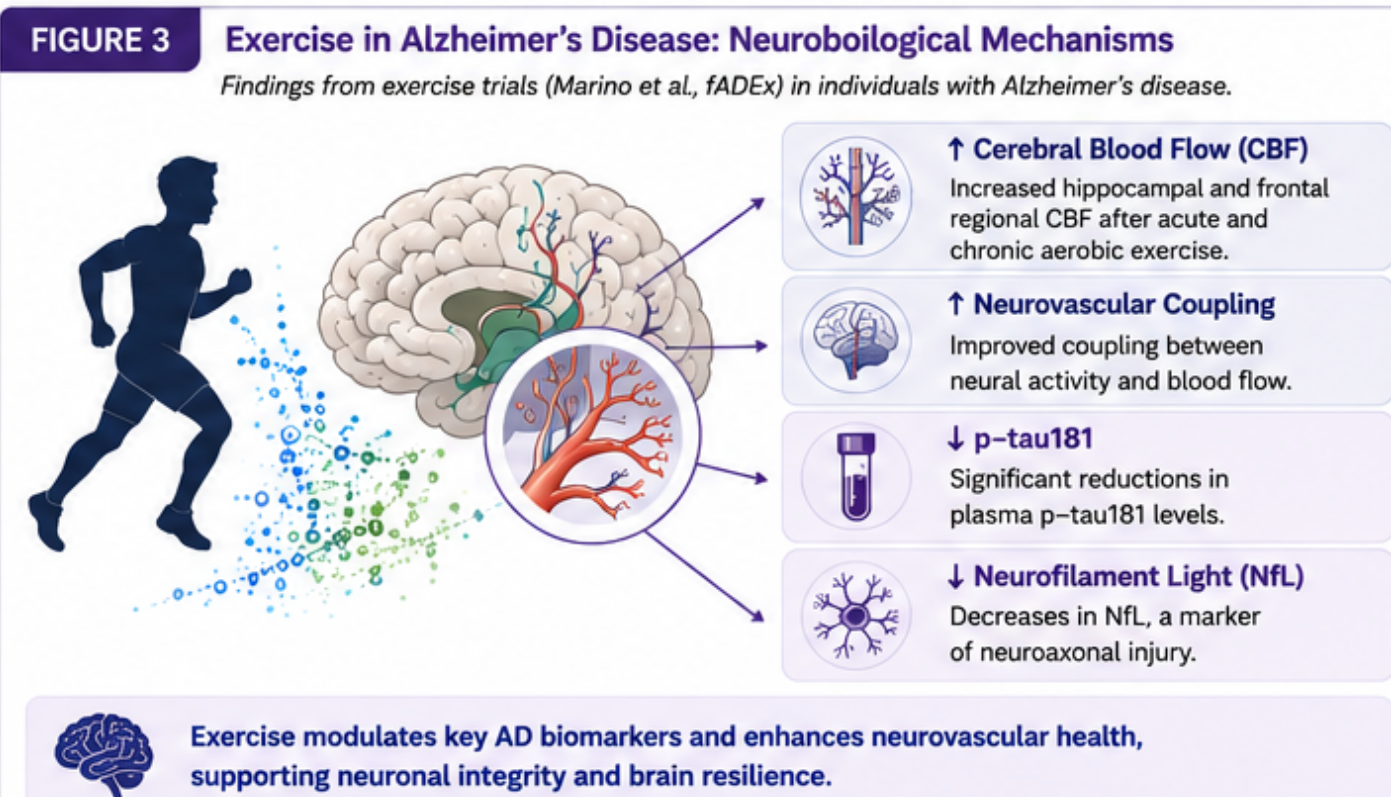
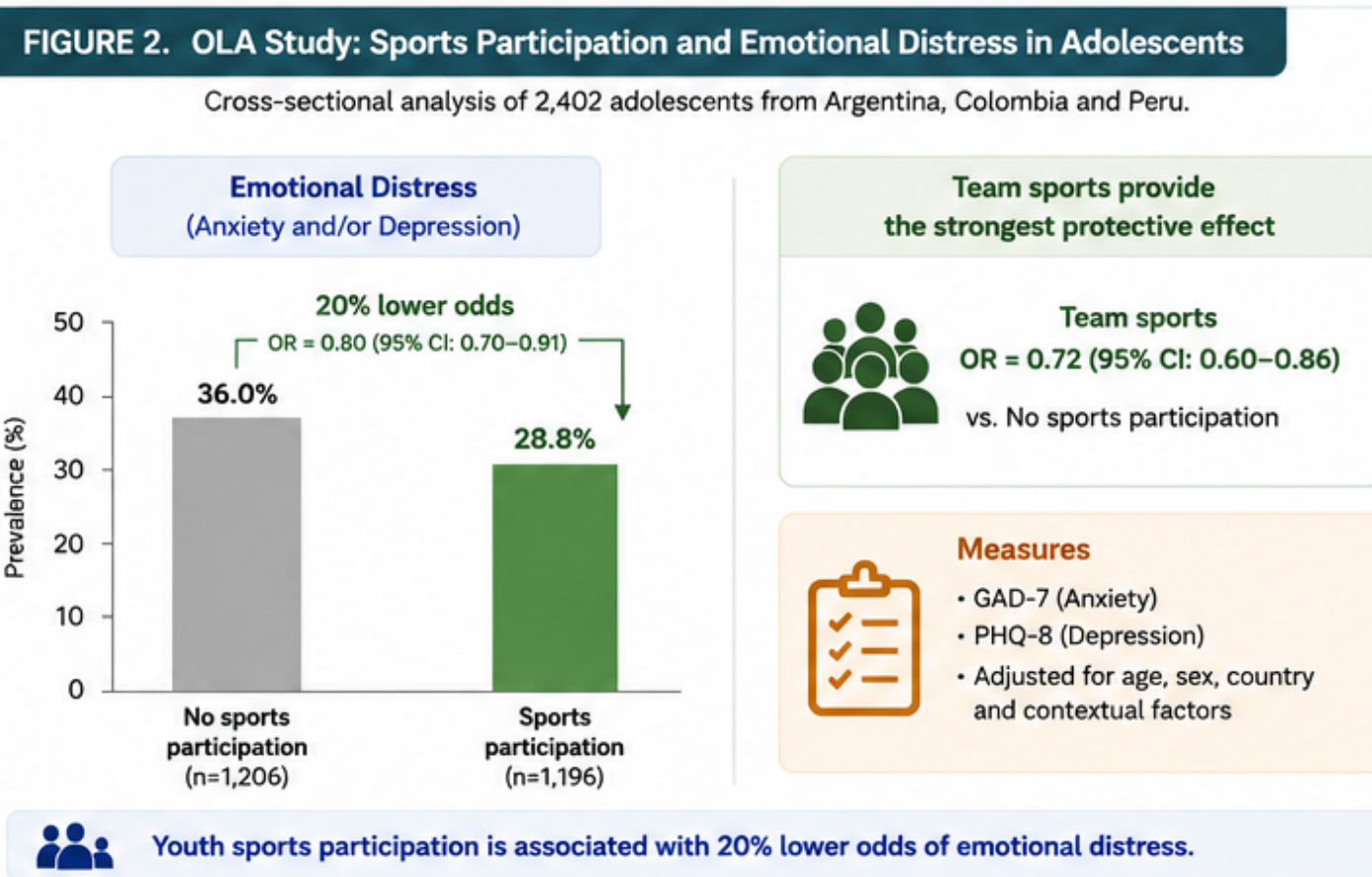
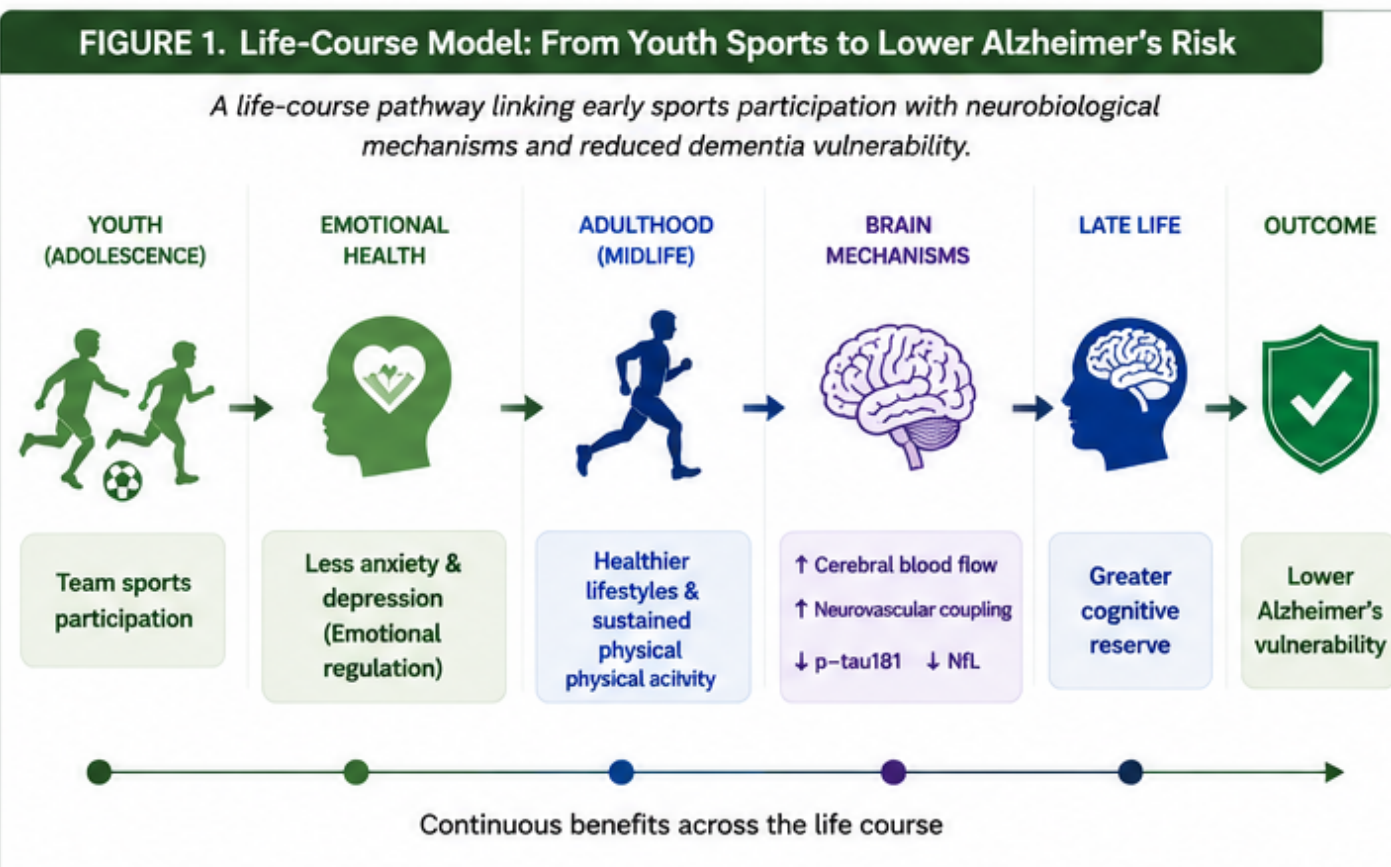
- Evidence from epidemiological studies shows that physical activity in midlife and late life reduces dementia incidence by **41–45%**.
- Data from the OLA Study (n=2,402) indicate that youth sports participation is associated with **lower emotional distress**, particularly anxiety and depression.
- Exercise trials in Alzheimer's disease demonstrate improvements in **cerebral blood flow, neurovascular coupling** and modulation of biomarkers such as **p-tau181** and **neurofilament light (NfL)**.
- Integrating youth behavior, adult physical activity, and neurobiological evidence offers a **life-course framework** linking sports participation with Alzheimer's prevention.

A LIFE-COURSE PATHWAY TO REDUCE ALZHEIMER'S RISK



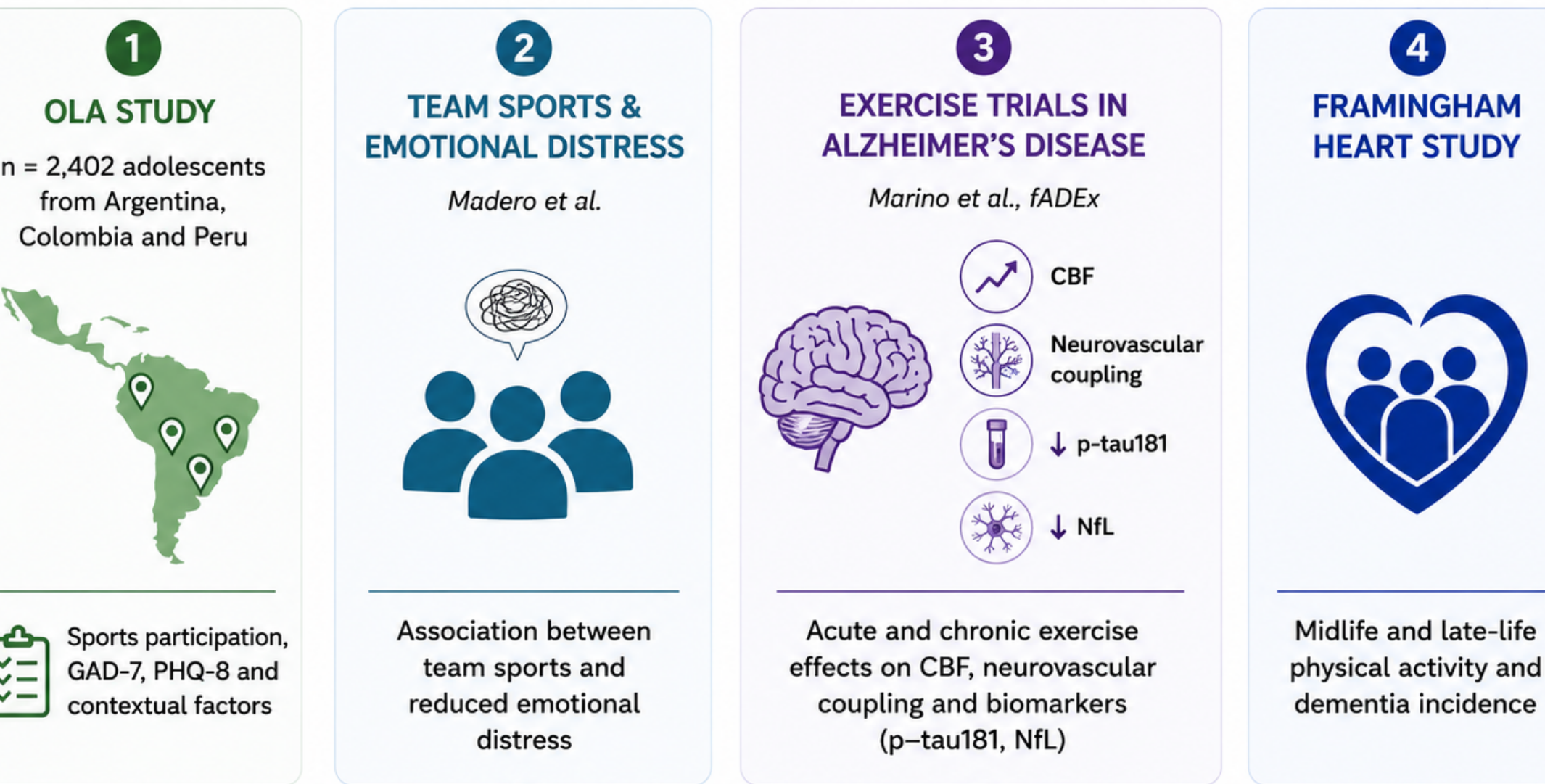
RESULTS

Our findings across complementary studies support a life-course pathway in which youth sports participation and physical activity reduce emotional distress and may lower Alzheimer's risk.



METHODS

We synthesised data from four complementary sources to build a life-course neurobehavioral model.



CONCLUSIONS

Youth team sports participation is associated with **lower emotional distress**.

Exercise in Alzheimer's disease improves **cerebral blood flow, neurovascular coupling** and **key biomarkers (p-tau181, NfL)**.

Longitudinal and life-course evidence indicates that **physical activity across adulthood reduces dementia risk** and may lower Alzheimer's vulnerability by **6–8%** at the population level.

Public health strategies should promote **sport engagement** from adolescence and support **lifelong physical activity**.

Integrating behavioral, epidemiological and neurobiological evidence supports a life-course approach in which youth sports participation and physical activity contribute to Alzheimer's prevention.

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