Supplementary Online Content

Roberts AL, Zafonte R, Chibnik LB, et al. Association of adverse childhood experiences with poor neuropsychiatric health and dementia among former professional US football players. *JAMA Netw Open*. 2022;5(3):e223299. doi:10.1001/jamanetworkopen.2022.3299

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This supplementary material has been provided by the authors to give readers additional information about their work.
eTable 1. Correlation of Childhood Adversities, Football Players Health Study, 2018-2021 (N = 1755)

|                          | Prevalence | Emotional abuse | Physical abuse | Sexual abuse | Emotional neglect | Physical neglect | Divorce | Intimate partner violence | Substance user | Mental illness | Prison |
|--------------------------|------------|----------------|----------------|--------------|------------------|------------------|---------|---------------------------|----------------|---------------|--------|
| N (%)                    |            |                 |                |              |                  |                  |         |                           |                |               |        |
| Emotional abuse          | 337 (19.3) | 1.00            | 0.59           | 0.13         | 0.34             | 0.22             | 0.23    | 0.35                      | 0.25           | 0.22          | 0.19   |
| Physical abuse           | 363 (20.7) | 1.00            | 0.14           | 0.28         | 0.24             | 0.17             | 0.35    | 0.23                      | 0.17           | 0.16          | 0.16   |
| Sexual abuse             | 111 (6.3)  | 1.00            | 0.11           | 0.15         | 0.13             | 0.13             | 0.12    | 0.13                      | 0.12           | 0.09          |        |
| Emotional neglect        | 117 (6.7)  | 1.00            | 0.31           | 0.13         | 0.21             | 0.19             | 0.16    | 0.16                      | 0.16           |               |        |
| Physical neglect         | 82 (4.7)   | 1.00            | 0.19           | 0.28         | 0.22             | 0.20             | 0.17    |                           |                |               |        |
| Divorce/separation       | 527 (30.2) | 1.00            | 0.26           | 0.27         | 0.16             | 0.21             |         |                           |                |               |        |
| Intimate partner violence to mother | 147 (8.4)  | 1.00            |                | 0.27         | 0.21             | 0.21             |         |                           |                |               |        |
| Household member substance user | 406 (23.2) | 1.00            |                | 0.23         | 0.23             |                  |         |                           |                |               |        |
| Household member mental illness/suicidal | 169 (9.7)  |                | 1.00           | 0.15         |                  |                  |         |                           |                |               |        |
| Household member imprisoned | 134 (7.7)  |                |                |              |                  |                  | 1.00    |                           |                |               |        |

All correlations significant at $P = .000$
eTable 2. Correlation of Neuropsychiatric Outcomes, Football Players Health Study, 2018-2021 (N = 1755)

|                          | Positive dementia screen | Poor cognition-related QoL | Probable depression | Probable anxiety | Pain severity | Pain interference |
|--------------------------|--------------------------|----------------------------|---------------------|------------------|---------------|-------------------|
| Positive dementia screen | 752 (43.1)               | 1.00                       | 0.67                | 0.45             | 0.36          | 0.28              | 0.39              |
| Poor cognition-related QoL | 656 (37.7)               | 1.00                       | 0.50                | 0.37             | 0.29          | 0.38              |
| Probable moderate or severe depression | 291 (16.6) | 1.00                       | 0.59                | 0.31             | 0.47          |
| Probable moderate or severe anxiety | 194 (11.1) | 1.00                       | 0.29                | 0.41             |
| High pain severity       | 556 (32.1)               |                            | 1.00                | 0.57             |
| High pain interference   | 421 (24.2)               |                            |                     |                  |

All correlations significant at $P < .0001$
### eTable 3. Adverse Childhood Experiences (ACEs) and 6 Neuropsychiatric Health Outcomes, Football Players Health Study, 2018-2021 (N = 1755)

| Abbreviation                  | None     | 1         | 2         | 3         | 4 or more | Test of trend |
|-------------------------------|----------|-----------|-----------|-----------|-----------|---------------|
| Base model adjusted for age,  | 1.0 [Ref]| 1.10 (0.91-1.33) | 1.12 (0.92-1.39) | **1.27 (1.00-1.59)** | 1.48 (1.22-1.79) | **<.001**      |
| race, and childhood SES      |          |           |           |           |           |               |
| Further adjusted for         | 1.0 [Ref]| 1.04 (0.88-1.24) | 1.09 (0.89-1.33) | 1.14 (0.93-1.40) | **1.32 (1.10-1.58)** | **.004**       |
| concussions                  |          |           |           |           |           |               |
| Outcome: Positive dementia   | 1.0 [Ref]| 1.14 (0.92-1.41) | **1.29 (1.03-1.62)** | 1.40 (1.09-1.80) | 1.65 (1.33-2.04) | **<.001**      |
| screen                       |          |           |           |           |           |               |
| Base model adjusted for age,  | 1.0 [Ref]| 1.20 (0.85-1.69) | 0.77 (0.49-1.22) | 1.38 (0.92-2.06) | 1.97 (1.35-2.97) | **.13**        |
| race, and childhood SES      |          |           |           |           |           |               |
| Further adjusted for         | 1.0 [Ref]| 1.15 (0.77-1.72) | 0.85 (0.50-1.40) | 0.96 (0.54-1.69) | 1.21 (0.74-1.96) | **.71**        |
| concussions                  |          |           |           |           |           |               |
| Outcome: Poor cognition-related quality of life | 1.0 [Ref]| 1.21 (0.79-1.86) | 0.82 (0.48-1.40) | 1.16 (0.63-2.12) | 1.46 (0.89-2.39) | **.22**        |
| Base model adjusted for age,  | 1.0 [Ref]| 1.00 (0.79-1.27) | 1.05 (0.80-1.37) | **1.46 (1.12-1.91)** | 1.48 (1.16-1.90) | **.001**       |
| race, and childhood SES      |          |           |           |           |           |               |
| Further adjusted for         | 1.0 [Ref]| 0.97 (0.77-1.22) | 1.03 (0.79-1.33) | **1.37 (1.06-1.77)** | **1.37 (1.07-1.74)** | **.003**       |
| concussion                   |          |           |           |           |           |               |
| Outcome: Moderate or severe pain intensity | 1.0 [Ref]| 1.14 (0.85-1.54) | 1.34 (0.98-1.85) | **1.75 (1.25-2.44)** | **1.74 (1.27-2.40)** | **<.001**      |
| Base model adjusted for age,  | 1.0 [Ref]| 1.11 (0.84-1.48) | 1.33 (0.98-1.80) | **1.60 (1.16-2.21)** | **1.56 (1.15-2.11)** | **.001**       |
| race, and childhood SES      |          |           |           |           |           |               |
| Further adjusted for         |          |           |           |           |           |               |
| concussions                  |          |           |           |           |           |               |

Notes: Concussions are concussion symptoms at the time of football injury. Poor cognition-related quality of life indicates “moderate” or “severe” impairment on the Neuro-QOL. Bolded estimates are statistically significant.

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