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Brazilian Jiu-Jitsu & the Brain: What the Science Says

By ISLAMABAD BRAZILIAN JIU JITSU.

Executive summary

Brazilian Jiu-Jitsu (BJJ) is a non-striking, partner-based discipline that pairs high-engagement problem solving with controlled physical stress. Across emerging studies, three themes stand out: (1) **short-term cognitive function** appears unchanged after brief choke exposures when measured with rapid ocular-motor screens; (2) **long-term cerebral blood flow** and cognition in elite BJJ athletes appear preserved, with some evidence of **elevated resting cerebral perfusion** versus fitness-matched controls; and (3) BJJ shares with other cognitively engaging activities a likely capacity to **stimulate neuroplastic processes** (e.g., activity-linked increases in brain-derived neurotrophic factor, BDNF, shown in judo as a close analog). Together with a growing literature on physical activity and cognition in youth, these findings support BJJ as a **credible, school-safe platform** for self-regulation, resilience, and brain health when delivered with age-appropriate rules, safeguarding, and injury-mitigation protocols.

1) Short-term cognitive effects of chokes

A 2024 study using the **King-Devick Test (KDT)** which is validated, tablet-based oculomotor/cognitive screen which compared grapplers exposed to choke submissions with non-choke controls. Across 62 athletes, there were **no significant differences** in failures, total times, or difference scores immediately after or 10 minutes after choke exposure, suggesting **no detectable acute decrement** on this measure from transient, controlled chokes common in training. This contrasts with KDT slowdowns observed after **striking-related concussions** in boxing and MMA. Importantly, KDT is a **screen**, not a biomarker; the finding supports cautious reassurance, not complacency.

2) Long-term cerebral perfusion and cognition in BJJ

A case-control study in elite BJJ athletes (n=11) reported **elevated global cerebral blood flow** (duplex ultrasound of internal carotids and vertebral arteries) with **no evidence of cognitive impairment** versus age- and fitness-matched controls. Authors interpret this as **adaptive neuroprotection**, though the sample is small and elite-biased; replication in larger, community cohorts is needed. Still, as **lower cerebral blood flow** is associated with cognitive decline in vascular impairment, the BJJ signal is encouraging and biologically plausible.

3) Neuroplasticity signals (BDNF) from combat grappling: judo as a proxy

In elite judo/BJJ's closest scientific analog, **randori** (sparring) acutely **increases plasma BDNF** more than a maximal ramp test, in both men and women. BDNF is central to synaptic plasticity and learning; while **BJJ-specific BDNF studies are not yet published**, similar training demands (problem-solving under pressure, intermittent high-intensity grappling) make transfer **highly plausible**. This dovetails with large reviews showing positive associations between **physical activity, cognition, and academic performance**, especially for cognitively engaging exercise.

4) Psychological profile and mental-health correlates in BJJ

A 2025 peer-reviewed study found **higher mental strength, resilience, self-efficacy, self-control, life satisfaction, and better mental health** among higher-rank BJJ athletes versus lower ranks (small-to-moderate effects; rank and experience covary). Although cross-sectional (causality cannot be inferred), results align with the lived pedagogy of BJJ which is iterative problem solving, “tap-learn-retry,” and peer-safety norms, and with broader literature linking structured activity to **executive function and emotional regulation** in youth.

5) Safety profile and risk management (what administrators need to know)

BJJ’s **non-striking** nature distinguishes its risk profile from striking sports. Contemporary epidemiology suggests injuries are primarily **orthopedic** and skew toward **training/sparring** rather than competition; recent multi-center work estimates **~5.5 injuries per 1,000 training hours** and **~55.9 per 1,000 matches**, with knees and shoulders common foci. Concussion **can** occur in grappling (lifetime self-report $\approx 25\%$ in one survey); risks concentrate in **novices** and during hard sparring which reinforces the case for **age-appropriate technique limits, tap-early culture, progressive resistance, coach certification, and return-to-learn/play protocols**. Compared with striking-dominant sports, mechanism and severity patterns are different; program design matters.

Bottom line for schools and parents: With **qualified instruction, age-tiered rules, and data-driven injury prevention**, BJJ can be delivered **safely** in educational settings while promoting cognitive, emotional, and social benefits.

6) Practical implications for the ISBBJJ “Neuroscience & Martial Arts Research Program”

a) Outcomes worth measuring in schools/universities

- **Executive function & attention:** brief computerized tasks + teacher ratings. Link sessions with attendance and behavior logs.
- **Self-regulation & resilience:** validated scales used in activity-based RCTs; pre-post by term.
- **Psychological well-being:** self-efficacy, grit, life satisfaction modules; stratify by belt progression.
- **Safety metrics:** exposure hours, injury logs (location/mechanism/severity), time-loss, and supervised return-to-play.

b) Study designs to prioritize

- **Prospective school cohorts** (12–24 months) vs. matched PE controls to test EF/resilience and attendance/discipline.
- **Session-linked cognitive testing** (pre/post practice) to probe acute effects and dose–response, adding simple physiological markers (HR/RPE).
- **Feasibility BDNF pilot** after controlled BJJ sessions in older teens, informed by the judo protocol.

c) Guardrails administrators will expect

- Certified coaches; female-coach options and safeguarding.
 - Technique restrictions by age; no neck cranks; strict “tap means stop” norms.
 - Concussion education; graded **return-to-learn** and **return-to-play** aligned to school policy.
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7) What this means for our policy ask

- BJJ provides **structured stress inoculation** and **consent-based problem solving** that maps onto the **same WHO social-ecological model** used to address youth risk globally. When embedded from early years to Year 12 with proper safeguards, BJJ can help cultivate **calm under pressure, empathy, impulse control, and perseverance**, alongside **fitness and brain health**.
- The science is **promising** and increasingly specific to BJJ (perfusion, cognition; psychological correlates). It does **not** license overclaims; rather, it supports **measured adoption paired with robust evaluation** which our Neuroscience & Martial Arts Program is now positioned to lead.

Final Word

“BJJ is a safe, non-striking, problem-solving practice that trains composure and consent under pressure; the early science on cognition, perfusion, and neuroplasticity says it belongs in schools with safeguards and measurement.”

Selected references (open-access where possible)

- **Short-term cognition after chokes:** Stellpflug SJ et al., *Med Sci Sports Exerc*, 2024.
- **KDT sensitivity in striking concussions:** Galetta KM et al., *Neurology*, 2011.
- **Cerebral perfusion in elite BJJ:** Stacey BS et al., *Scand J Med Sci Sports*, 2021.
- **BDNF after combat sparring (judo):** Schor B et al., *Braz J Med Biol Res*, 2019.
- **PA, cognition & academics (systematic review):** Donnelly JE et al., CDC archive, 2016.
- **Psychological characteristics by BJJ rank:** de Lorenzo-Lima L et al., *J Funct Morphol Kinesiol*, 2025.
- **Injury epidemiology in BJJ:** Stegerhoek PM et al., *BMJ Open Sport & Exercise Medicine*, 2025 (global survey); Hinz M et al., 2021; Moriarty C et al., 2019; Spano M et al., 2019 (concussion survey).

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