**Supplemental Content 4**

To respect the assumption of independence of scores in the statistical analyses, whenever several tasks or measures assessing the same cognitive subdomain were reported within a study, two licensed clinical neuropsychologists determined the most appropriate measure for the given cognitive subdomain. For example, some studies (references 8-11) including both the Symbol Digit Modalities Test (SDMT) and a version of the Trail Making Test part A (TMT-A), two tasks of processing speed. The authors deemed the SDMT to be the most representative task of processing speed based on the contemporary model utilized in the present study. The two studies (references 12-13) including only the TMT-A (not the SDMT) were included in the processing speed forest plots. Some tasks (e.g., PASAT, OSPAN Math, RBANS Language, Rey Complex Figure test) were not representative of the cognitive domains used in the current analyses and/or were not used in multiple studies, therefore preventing their inclusion in forest plots. Finally, whenever multiple measures (e.g., reaction time, accuracy, errors) were reported for a given task, the measure that was most commonly reported across the studies was used. See Table S2.

For studies including more than one HOC group, the group that was the most akin to the other included studies was used. Specifically, for three papers (references 9,14, 39), the HOC group with multiple concussions was chosen because none of the other samples included athletes with a history of a single concussion (4 studies included only athletes with a history of multiple concussions, 14 included a mix of history of a single and multiple concussions; average=2.42±1.10 concussions). Further, Theriault and colleagues (8) included two HOC groups, the “recent” (5-12 months post-concussion) and the “late” (22-60 months post-concussion). Since the other samples included in the present study were on average 29.67±19.50 (range=6.30-62.40 months on average) months post-injury, the “late” concussion group (22.61±24.42 months) was chosen.Two studies (15,16) included independent male and female HOC groups. Because most studies included mostly male athletes, the HOC group that was composed of male athletes was used in the present analyses.

**Table S2. Reason non-inclusion of specific tasks in the meta-analyses**

|  |  |  |  |
| --- | --- | --- | --- |
| **Author (Year)** | **Cognitive Task** | **Cognitive Domain** | **Reason for Exclusion** |
| **Baillargeon (2012)** | Color Trails A | Processing Speed | SDMT was used as the measure of processing speed for this study |
| **Broglio (2006)** | CRI Headminder composite scores | Varied | Not a fit with the present cognitive domains |
| **Bruce (2009)** | TMT A | Processing Speed | SDMT was used as the measure of processing speed for this study |
| **Clough (2018)** | HSCT | EF – Response Inhibition | Stroop was used as the measure of EF for this study |
|  | PASAT |  | Not a fit with the present cognitive domains |
|  | Digit Span Forward | N/A | Not a fit with the present cognitive domains |
|  | Digit Span Total | EF – Prospective Working Memory | Used Digit Span Backward was used as the measure for prospective working memory |
|  | National Adult Reading Test | N/A | Not a fit with the present cognitive domains |
| **Killam (2005)** | RBANS Visuospatial construction | N/A | Not a fit with the present cognitive domains |
|  | RBANS Language | N/A | Not a fit with the present cognitive domains |
|  | Stroop – Block colors | Processing Speed | Too different from other processing speed tasks/not appropriate for the contemporary model |
|  | Stroop – Colored non-sensed words | Processing Speed | Too different from other processing speed tasks/not appropriate for the contemporary model |
| **Lavoie (2004)** | Color Trail A percentile | Processing Speed | SDMT was used as the measure of processing speed for this study |
| **Léveillé (2017)** | Rey Complex Figure test Immediate Recall | N/A | Not a fit with the present cognitive domains |
|  | Rey Complex Figure test Delayed Recall | N/A | Not a fit with the present cognitive domains |
|  | Stroop (D-KEFS Cond. 1) | Processing Speed | Too different from other processing speed tasks/not appropriate for the contemporary model |
|  | Stroop (D-KEFS Cond. 2) | Processing Speed | Too different from other processing speed tasks/not appropriate for the contemporary model |
|  | Stroop (D-KEFS Cond. 4) | EF – Set-shifting and Interference Management | Too different from other set-shifting tasks/not appropriate for the contemporary model |
|  | WAIS-IV Comprehension Test | N/A | Not a fit with the present cognitive domains |
| **List (2015)** | TMT B | EF – Set-shifting and Interference Management | Regensburger G/R Words was used as the measure of set-shifting for this study |
|  | Digit Span Forward | N/A | Not a fit with the present cognitive domains |
|  | Regensburger – Food | EF – Strategy Generation | Regensburger S Words was used as the measure of strategy generation for this study |
|  | Regensburger – Clothes | EF – Set-shifting and Interference Management | Regensburger G/R Words was used as the measure of set-shifting for this study |
|  | Rey Complex Figure test Immediate Recall | N/A | Not a fit with the present cognitive domains |
|  | Rey Complex Figure test Delayed Recall | N/A | Not a fit with the present cognitive domains |
| **Moore (2017)** | Tower of London | N/A | Not a fit with the present cognitive domains |
|  | Stroop Color | Processing Speed | Too different from other processing speed tasks/not appropriate for the contemporary model |
|  | Stroop Words | Processing Speed | Too different from other processing speed tasks/not appropriate for the contemporary model |
|  | Stoop Interference | EF – Set-shifting and Interference Management | No other study used this measure |
| **Terry (2012)** | OSPAN Math | N/A | Not a fit with the present cognitive domains |
|  | OSPAN Simple Math | N/A | Not a fit with the present cognitive domains |
|  | RBANS Composite Scaled Score | N/A | Not a fit with the present cognitive domains |
|  | RBANS Visuospatial construction | N/A | Not a fit with the present cognitive domains |
|  | RBANS Language | N/A | Not a fit with the present cognitive domains |
|  | Stroop Congruent | EF – Response Inhibition | No other study used this task/measures |
|  | Stroop Incongruent – accuracy, reaction time | EF – Set-shifting and Interference Management | No other study used this task/measures |
| **Theriault (2009)** | Color Trails A | Processing Speed | SDMT was used as the measure of processing speed for this study |
| **Wilke (2017)** | TMT B | EF – Set-shifting and Interference Management | Regensburger G/R Words was used as the measure of set-shifting for this study |
|  | Regensburger – Food | EF – Strategy Generation | Regensburger S Words was used as the measure of strategy generation for this study |
|  | Regensburger – Clothes | EF – Set-shifting and Interference Management | Regensburger G/R Words was used as the measure of set-shifting for this study |
|  | Rey Complex Figure test Immediate Recall | N/A | Not a fit with the present cognitive domains |
|  | Rey Complex Figure test Delayed Recall | N/A | Not a fit with the present cognitive domains |
|  | Digit Span Forward | N/A | Not a fit with the present cognitive domains |

*Notes*. EF = Executive Functions; HSCT = Hayling’s Sentence Completion Test (HSCT); OSPAN = Operation Span task; PASAT = Paced Auditory Serial Addition Test; RBANS = Repeatable Battery for the Assessment of Neuropsychological Status; SDMT = Symbol Digit Modalities Test; TMT = Trail Making Test; WAIS-IV = Wechsler Adult Intelligence Scale 4th Edition.