

Construct Validity of ImPACT in Athletes with Concussions

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Introduction: The purpose of this study was to examine the convergent and divergent validity of computerized neuropsychological testing in a sample of athletes with concussions. **Method:** Twenty-five amateur athletes completed ImPACT Version 2.0 and several traditional neuropsychological measures within 20 days post injury (Mean = 9.6, SD = 5.5). The traditional measures were the Trailmaking Test, Symbol Digit Modalities Test (SDMT), and the Brief Visuospatial Memory Test (BVMT). **Results:** There were medium significant correlations between the BVMT total score and the two ImPACT memory composites ($r = .50$ for both). The BVMT Total score was not significantly correlated with the other ImPACT composites, Trails A, Trails B, or the SDMT. The BVMT Delayed Recall score was highly correlated with the two ImPACT memory composites ($r = .85$ for both). There were medium correlations between this score and the other three ImPACT composites and the SDMT. Trails A was significantly correlated with the Processing Speed composite ($r = -.49$), SDMT ($r = -.70$), and with Trails B ($r = .56$). Trails B was significantly correlated with the Processing Speed composite ($r = -.60$) and the SDMT ($r = -.50$). The SDMT was significantly correlated with the four performance based composites from ImPACT, but not with the symptoms total score. **Discussion:** The ImPACT composites showed the expected relationships with other tests. The memory composites were most highly correlated with the traditional memory measures and the Processing Speed composite was correlated most highly with Trails B and the SDMT.

Word Count: 246

Maximum Words: 255

Table1. Intercorrelation matrix.

	1	2	3	4	5	6	7	8	9
1. Verbal Memory									
2. Visual Memory	.75**								
3. Processing Speed	.51**	.60**							
4. Reaction Time	-.54**	-.50*	-.55**						
5. Symptoms	-.44**	-.59**	-.35	.28					
6. BVMT-Total	.50*	.50*	.31	-.22	-.37				
7. BVMT-Delay	.85**	.85**	.42*	-.52**	-.48*	.62**			
8. Trails A	-.24	-.27	-.49*	.27	.16	-.14	-.21		
9. Trails B	-.16	-.17	-.60**	.15	-.08	-.37	-.14	.56**	
10. SDMT	.47*	.42*	.68**	-.51*	-.31	.31	.40	-.70**	-.50*

*p < .05, **p < .01