

CONCUSSION BINGO: ARE YOU PREPARED?

Results Summary from the 2019 Missouri Regional
“Sports Concussions: Facts, Fallacies and New
Frontiers” Seminars

Featuring a comparison of result from 2016, 2017, and 2018

Key findings report by:

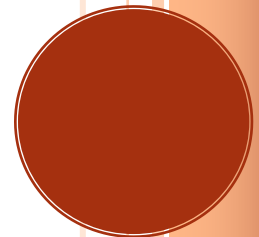
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6/19/2019



INTRODUCTION

For the past four years, the Brain Injury Association of Missouri, Missouri Department of Health and Senior Services, and University of Missouri Kansas City - Institute for Human Development have collaborated with sponsors across the state to hold regional sports concussion seminars. The seminars, titled *Sports Concussions: Facts, Fallacies and New Frontiers*, provide quality information on traumatic brain injury (TBI) policy and procedure development to coaches, school administrators, school nurses, and first responders.

A self-assessment form, titled *Concussion BINGO – Are You Prepared?*, is shared with all seminar participants and is intended to gather information on if and how frequently schools across the state implement a variety of TBI screening and education policies and practices. Issues addressed on the *Concussion Bingo* assessment include coaches' education, safety equipment check, and "Return to Learn" form use.

WHAT IS CONCUSSION BINGO?

During regional *Sports Concussions: Facts, Fallacies and New Frontiers* seminars, national and international experts discuss signs and symptoms of a possible concussion. Speakers also provide updates on concussion-related research and "Return-to-Learn" protocols that have been discussed in previous *Sports Concussions: Facts, Fallacies and New Frontiers* seminars. Examples of topics that speakers cover include baseline testing, how to encourage youth to report possible concussion symptoms, and concussion management strategies, which attendees may use to develop their team or school's Concussion Management Protocol.

As topics are discussed throughout the seminar, attendees are asked to complete the *Concussion BINGO* assessment with regard to their concussion management practices within their school or team (see Appendix A to review the *Concussion BINGO* assessment form items). Ratings for each item range from "0," or "does not currently implement the policy or practice item," to "5," or "yes, implementing 100% of the time." Additional ratings include: "1" = implementing less than 25% of the time; "2" = implementing between 25 and 49% of the time; "3" = implementing between 50 and 74% of the time; and "4" = implementing between 75 and 100% of the time.

To ensure that attendees understand the assessment items, attendees are given the opportunity to ask questions during the seminars.

RESULTS

Results from the 2019 *Concussion BINGO* assessment, including to a comparison to 2016, 2017, and 2018 data, are discussed below.

2019 DEMOGRAPHICS

Table 1 shows the response rate on the *Concussion BINGO* assessment for attendees of the 2019 *Sports Concussions: Facts, Fallacies and New Frontiers* seminars by region.

Table 1. Concussion BINGO responses in 2019 by region

Location	<i>Responses</i> <i>n (%)</i>
Columbia	50 (38.5)
Kansas City	38 (29.2)
St Louis	42 (32.3)

Table 1 key findings include:

- ❖ A total of 130 *Concussion BINGO* assessments were received from regional seminar attendees statewide in 2019.
- ❖ Over half of all responses were from either the Columbia region ($n=50$, 38.5%) or the St. Louis region ($n=42$ 32.3%).
- ❖ The fewest number of *Concussion BINGO* assessment surveys were received from the Kansas City region ($n=38$, 29.2%).

CONCUSSION BINGO

Table 2 displays concussion management policy and practice non-implementation rates in 2019 by region.

Table 2. Concussion management policy and practice implementation in 2019 by region

Item	St. Louis (n = 42)		Kansas City (n = 38)		Columbia (n = 50)	
	No n(%)	Missing n(%)	No n(%)	Missing n(%)	No n(%)	Missing n(%)
Certified Athletic Trainer (full-time)	17(40.5)	4(9.5)	7(18.4)	0	30(60)	3(6)
Adequately Using Resources	2(4.8)	0	7(16.7)	2(5.3)	3(7.9)	2(4)
Ambulance at Some Contests	17(40.5)	4(9.5)	6(15.8)	1(2.6)	9(18)	1(2)
Minimizing Head Impact	7(16.7)	8(19)	2(5.3)	4(10.5)	5(10)	8(16)
Emergency Action Plan	3(7.1)	4(9.5)	1(2.6)	1(2.6)	3(6)	2(4)
Adequate Staffing	1(2.4)	2(4.8)	3(7.9)	3(5.3)	6(12)	3(6)
Parent’s Meeting and Education	9(21.4)	4(9.5)	2(5.3)	1(2.6)	6(12)	2(4)
Team Doctor	20(47.6)	4(9.5)	12(31.6)	3(7.9)	27(54)	3(6)
Certified Athletic Trainer (part-time)	17(40.5)	6(14.3)	8(21.1)	3(7.9)	16(32)	1(2)
School Board Policy	10(23.8)	3(7.1)	4(10.5)	9(23.7)	8(16)	7(14)
School District Procedures	4(9.5)	4(9.5)	2(5.3)	7(18.4)	4(8)	4(8)
Administration Meeting and Education	9(21.4)	8(19)	2(5.3)	3(7.9)	9(18)	8(16)
Nurse Education	3(7.1)	2(4.8)	1(2.6)	5(13.2)	4(8)	2(4)
Student Athletic Meeting and Education	9(21.4)	5(11.9)	2(5.3)	1(2.6)	2(4)	0
Financial Commitment to Best Practice	9(21.4)	7(16.7)	4(10.5)	2(5.3)	9(18)	1(2)
Return to Learn Form	13(31)	3(7.1)	4(10.5)	4(10.5)	18(36)	7(14)
Ambulance at All Contests	27(64.3)	5(11.9)	25(65.8)	2(5.3)	22(44)	1(2)
Return to Play Form	6(14.3)	4(9.5)	1(2.6)	0	4(8)	2(4)
Baseline Testing	10(23.8)	5(11.9)	2(5.3)	0	21(42)	6(12)
Emergency Action Plan Practice	9(21.4)	3(7.1)	10(27.8)	2(5.3)	9(18)	7(14)
Pre-Participation on Physical Education	9(21.4)	4(9.5)	0	0	4(8)	0
School Board Meeting and Education	16(38.1)	4(9.5)	8(21.1)	12(31.6)	19(38)	9(18)
Safety Equipment Check	5(11.9)	4(9.5)	2(5.3)	7(18.4)	1(2)	2(4)
Coach’s Education	3(7.1)	3(7.1)	1(2.6)	1(2.6)	2(4)	1(2)

Table 2 key findings include:

- ❖ Most participants reported that the majority of the concussion management policies and practices were being implemented in their regions in 2019.
- ❖ In Columbia, many respondents reported that the following policies or practices were not being implemented within their school or team in 2019:
 - Certified Athletic Trainer (full-time) (not implementing: 60%)
 - Team Doctor (not implementing: 54%)
 - Ambulance at All Contests (not implementing: 44%)
 - Baseline Testing (not implementing: 42%)
- ❖ In Kansas City, many respondents reported that the following policies or practices were not being implemented within their school or team in 2019:
 - Ambulance at All Contests (not implementing: 65.8%)
 - Team Doctor (not implementing: 31.6%)
- ❖ In St. Louis, many respondents reported that the following policies or practices were not being implemented within their school or team in 2019:
 - Ambulance at All Contests (not implementing: 64.3%)
 - Team Doctor (not implementing: 47.6%)

Figure 1 displays the average change in overall *Concussion BINGO* frequency ratings statewide for policies (only those currently being implemented in the identified year) and by region between 2016 ($n = 210$), 2017 ($n = 252$), 2018 ($n = 277$) and 2019 ($n = 130$).

Note. Ratings ranged from “0,” or “does not currently implement the policy or practice item,” to “5,” or “yes, implementing 100% of the time.” Additional ratings include: “1” = implementing up to 24% of the time; “2” = implementing between 25-49% of the time; “3” = implementing between 50-74% of the time; and “4” = implementing between 75-100% of the time.

Figure 1. Change in average Concussion BINGO scores by location 2016-2019 (includes only those policies that were being implemented, ratings 1-5)

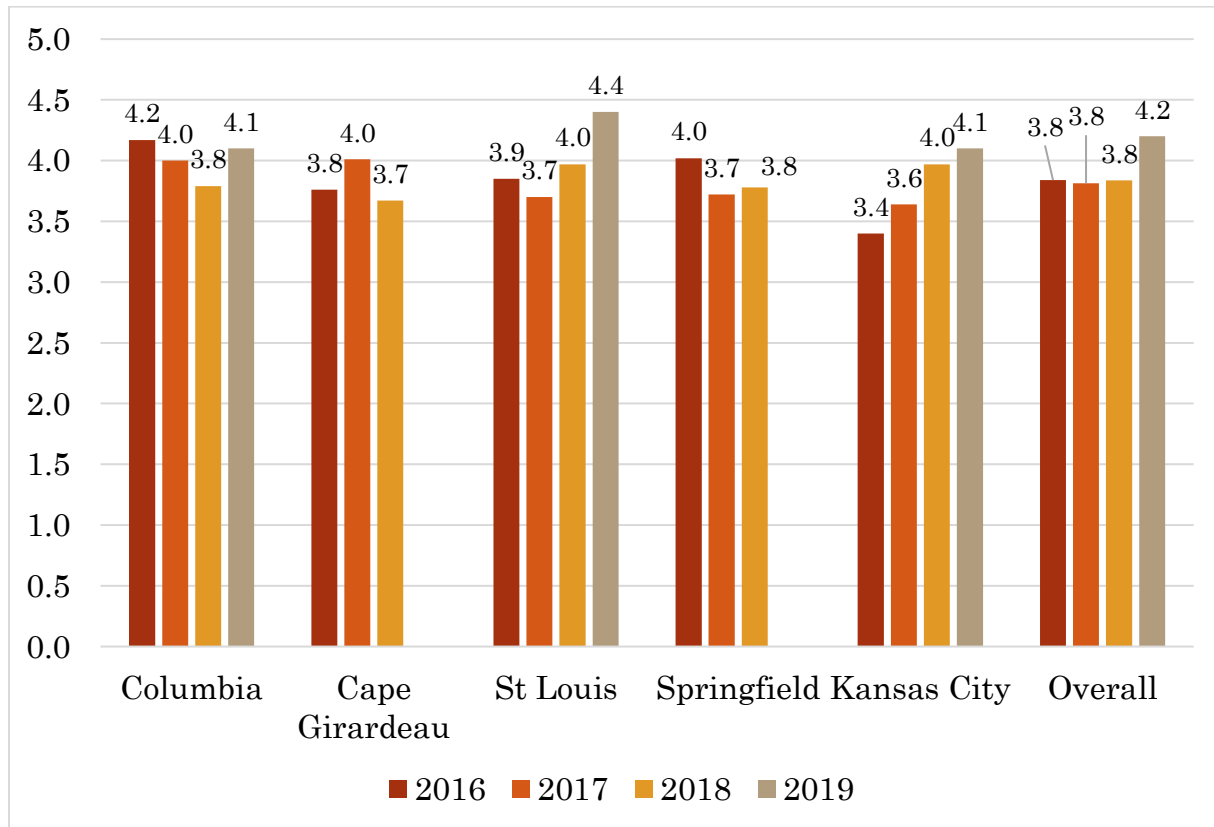


Figure 1 key findings include:

- ❖ Of those policies / practices that were being implemented in the identified year, the overall average rating statewide *Concussion BINGO* for 2016, 2017, 2018 and 2019 was 3.9, or implementing between 50 and 75% of the time. This rating improved to 4.2 for 2019.
- ❖ Overall *Concussion BINGO* ratings remained relatively stable from 2016 to 2019 for the Columbia region. Ratings for the Kansas City and St. Louis regions show a steady improvement from 2016 to 2019.
- ❖ Attendees of the seminars in the Kansas City region gave the lowest average ratings in 2016 ($M = 3.4$), however ratings increased in 2017, 2018 and 2019 (2017: $M = 3.6$, 2018: $M = 4.0$ and 2019: $M = 4.1$).

Table 3 displays the number and percentage of respondents who reported that the organization that they represent implements the identified policy or practice. Table 3 also shows the average *Concussion BINGO* item ratings in 2019.

Table 3. Average Concussion BINGO item ratings in 2019

<i>Item</i>	<i>n (%)</i>	Average Rating
Pre-Participation on Physical Education	113 (86.9)	4.8
Return to Play Form	114 (87.7)	4.7
Safety Equipment Check	109 (83.8)	4.6
Emergency Action Plan	119 (91.6)	4.6
School District Procedures	105 (80.8)	4.5
Coach's Education	119 (91.5)	4.5
School Board Policy	89 (68.5)	4.5
Minimizing Head Impact	96 (73.8)	4.4
Certified Athletic Trainer (Part-Time)	76 (58.5)	4.4
Nurse Education	113 (86.9)	4.3
Student Athletic Meeting and Education	111 (85.4)	4.3
Baseline Testing	86 (66.2)	4.2
Certified Athletic Trainer (Full-Time)	69 (53.1)	4.1
Ambulance at Some Contests	92 (70.8)	4.1
Adequate Staffing	113 (86.9)	4.1
Return to Learn Form	81 (62.3)	4.1
Parent's Meeting and Education	106 (81.5)	4.0
Adequately Using Resources	117 (90.0)	4.0
Emergency Action Plan Practice	90 (69.2)	3.9
Administration Meeting and Education	91 (70.0)	3.8
Team Doctor	61 (46.9)	3.7
Financial Commitment to Best Practice	98 (75.4)	3.6
School Board Meeting and Education	62 (47.7)	3.4
Ambulance at All Contests	48 (36.9)	3.0

Note. The average ratings were calculated using only participants who answered "Yes," that the policy was implemented in 2019

Table 3 key findings include:

- ❖ 90% of respondents reported that the following concussion management practices were being implemented within their school or team in 2019: “emergency action plan” (91.6%), “coach’s education” (91.5%), and “adequately using resources” (90.0%).
- ❖ Fewer than 50% of respondents reported that the following concussion management practices were being implemented within their school or team in 2019: “school board meeting and education” (47.7%) “team doctor” (46.9%), and “ambulance at all contests” (36.9%).
- ❖ Of those policies that were being implemented in 2019, the highest average item rating statewide in 2019 was for “pre-participation on physical evaluation form” ($M = 4.8$). [Note. A rating of “4” = implementing the policy or practice between 75-100% of the time].
- ❖ On average, respondents reported that all but one policy or practice item (“ambulance at all contests”) are implemented at least 50% of the time in 2019 (with a rating of “3” or higher).

Table 4 shows the number and percentage of respondents who reported that the organization that they represent implements the identified policy or practice by region. *Table 4* also shows the average *Concussion BINGO* item ratings in 2019 by region. In general, the percentage of organizations implementing each policy or procedure varies greatly by region. For example, only 34% of respondents from Columbia reported that their organization has a “Certified Athletic Trainer (full-time),” whereas 81.6% and 76.2% of respondents from Kansas City and St. Louis responded affirmatively to this item, respectively.

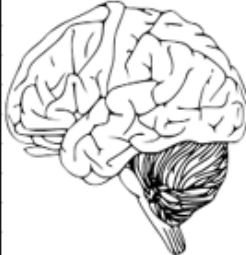
Table 4. Average item ratings by region in 2019

<i>Item</i>	Columbia (n = 50)			Kansas City (n = 38)			St. Louis (n = 32)		
	<i>n</i>	<i>%</i>	<i>Mean</i>	<i>n</i>	<i>%</i>	<i>Mean</i>	<i>n</i>	<i>%</i>	<i>Mean</i>
Certified Athletic Trainer (full-time)	17	34.0%	3.7	31	81.6%	4.2	32	76.2%	4.4
Team Doctor	20	40.0%	3.7	23	60.5%	3.6	18	42.9%	3.9
School Board Meeting and Education	22	44.0%	3.3	18	47.4%	3.3	22	52.4%	3.6
Baseline Testing	23	46.0%	3.7	36	94.7%	4.4	27	64.3%	4.3
Return to Learn Form	25	50.0%	3.9	30	78.9%	3.8	26	61.9%	4.5
Ambulance at All Contests	27	54.0%	3.3	11	28.9%	2.5	10	23.8%	2.6
Certified Athletic Trainer (part-time)	33	66.0%	3.9	24	63.2%	4.7	19	45.2%	4.9
Administration Meeting and Education	33	66.0%	3.3	33	86.8%	3.9	25	59.5%	4.2
Emergency Action Plan Practice	34	68.0%	3.7	26	68.4%	3.8	30	71.4%	4.3
School Board Policy	35	70.0%	4.3	25	65.8%	4.5	29	69.0%	4.7
Minimizing Head Impact	37	74.0%	4.4	32	84.2%	4.4	27	64.3%	4.5
Ambulance at Some Contests	40	80.0%	3.9	31	81.6%	4.3	21	50.0%	4.2
Financial Commitment to Best Practice	40	80.0%	3.6	32	84.2%	3.6	26	61.9%	3.8
Adequate Staffing	41	82.0%	4	33	86.8%	4.1	39	92.9%	4.1
Parent’s Meeting and Education	42	84.0%	4.3	35	92.1%	3.5	29	69.0%	4.2
School District Procedures	42	84.0%	4.4	29	76.3%	4.4	34	81.0%	4.6
Nurse Education	44	88.0%	4.3	32	84.2%	3.9	37	88.1%	4.5
Return to Play Form	44	88.0%	4.7	38	100.0%	4.6	32	76.2%	4.8
Pre-Participation on Physical Education	46	92.0%	4.8	38	100.0%	4.7	29	69.0%	5
Safety Equipment Check	47	94.0%	4.6	29	76.3%	4.2	33	78.6%	4.9
Coach’s Education	47	94.0%	4.6	36	94.7%	4.2	36	85.7%	4.5
Emergency Action Plan	48	96.0%	4.3	36	94.7%	4.4	35	83.3%	4.9
Student Athletic Meeting and Education	48	96.0%	4.3	35	92.1%	4.1	28	66.7%	4.4
Adequately Using Resources	49	98.0%	3.9	35	92.1%	4.1	33	78.6%	4.1

Note. The average ratings were calculated using only participants who answered "Yes," that the policy was implemented

APPENDIX A

CONCUSSION BINGO: ARE YOU PREPARED?

Certified Athletic Trainer (Full Time)	Adequately Using Resources (up-to-date)	Ambulance At Some Contests	Minimizing Head Impact Football	Emergency Action Plan
No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes	≥ 90 90 >	No 1 2 3 4 Yes
Adequate Staffing	Parent's Meeting and Education	Team Doctor	Certified Athletic Trainer (part-time)	School Board Policy
No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes
School District Procedures	Administration Meeting and Education		School Nurse Education	Student Athlete Meeting and Education
No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes
Financial Commitment to Best Practices	Return to Learn Form	Ambulance at ALL Contests	Return to Play Form	Baseline Testing
No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes
Emergency Action Plan Practice	Pre-Participation Physical Evaluation Form	School Board Meeting and Education	Safety Equipment Check	Coaches' Education
No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes	No 1 2 3 4 Yes