

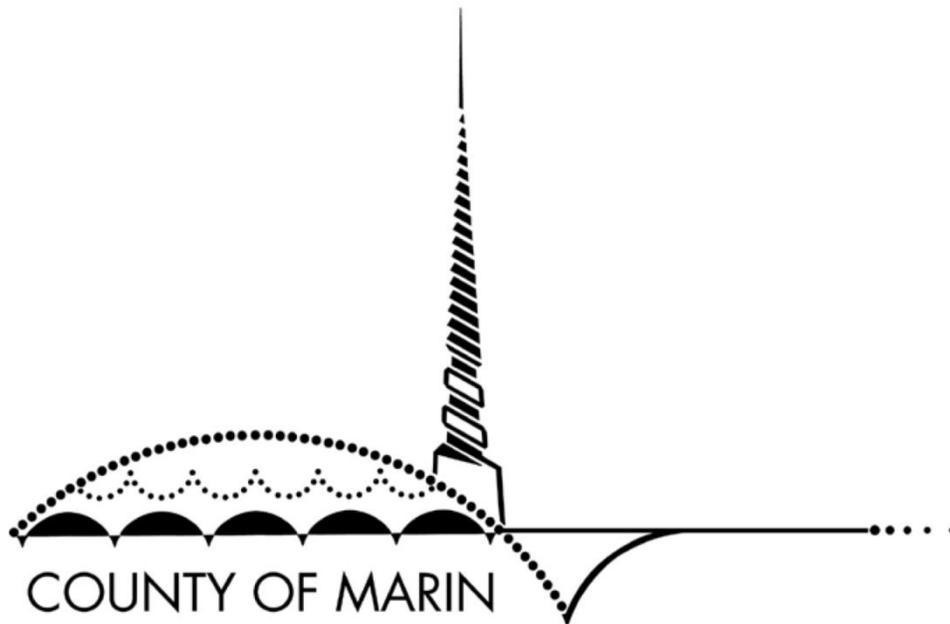
2017-2018 MARIN COUNTY CIVIL GRAND JURY

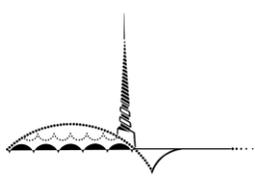
# Head Injuries and Concussions

*Are Our High Schools Keeping Our Children Safe?*  
A Follow-Up

Report Date: March 21, 2018

Public Release Date: March 28, 2018





## Head Injuries and Concussions: *Are Our High Schools Keeping Our Children Safe?* A Follow-Up

### **SUMMARY**

The 2015-16 Marin County Civil Grand Jury issued a report entitled, [“Head Injuries and Concussions: Are Our High Schools Keeping our Children Safe?”](#) on February 19, 2016. The report detailed the potential for head injury associated with playing “high risk” sports in high school and made nine recommendations aimed at improving the school districts’ treatment of head injuries. Much has happened relative to our understanding of head injuries in sports over the two years since that report. The 2017-18 Civil Grand Jury surveyed Marin’s High School Districts on the key concerns of the previous report and this report is an update on the school districts’ implementation of those recommendations two years later. The question of whether or not even these recommendations are sufficient to protect our young people remains open.

A summary of the 2015-16 recommendations follows and is the basis of the survey:

1. Annual mandatory neurocognitive testing, and retesting post-injury, should be required.
2. A certified athletic trainer should administer and interpret all tests.
3. A certified athletic trainer should be present at all high-risk sporting events.
4. Written protocols for reporting head injuries should be adopted.
5. Return-to-Play and Return-to-Learn protocols should be adopted for all injured athletes.
6. Student athletes should receive mandatory concussion education.
7. Head injury data should be compiled by the Marin County Office of Education.

A summary of the responses to the survey can be found in the discussion section and complete copies of the responses can be found in the Appendix. The school districts’ responses indicate that awareness of the issue of head injuries has increased but implementation of remedies still varies.

## **BACKGROUND**

The reasons for a follow-up study at this time include:

- The science relating to the topic of Chronic Traumatic Encephalopathy (CTE) continues to evolve.
- Young people are more susceptible to brain injury than adults and the damage is cumulative over time.
- CTE cannot be definitively diagnosed while the patient is living.
- There is no specific treatment for CTE.

Since the previous report there has been additional medical research concluding that Chronic Traumatic Encephalopathy (CTE) arises from repeated head injuries and presents even greater risk to young athletes than to adult athletes.

“CTE causes myriad symptoms, including memory loss, confusion, depression, and dementia. The problems can arise years after the blows to the head have stopped.”<sup>1</sup>

“Researchers at Boston University published research that found that adults who began playing football before they were 12 years old developed more cognitive and behavioral problems than those players who started tackle football after they reached that age.”<sup>2</sup>

“In 2016 after many years of denying scientific evidence, the National Football League admitted that there is a link between football and degenerative brain disorders like CTE.”<sup>3</sup>

The above are a few of the recent news articles involving head injuries in sports. The damage to players with many years of football experience is becoming better understood. Due to the fact that CTE cannot be diagnosed while the player is living, we do not know how much of this damage occurs in high school. Therefore, the only reasonable course of action with young athletes is to err on the side of caution. Head injury protocols should be the best available and should be applied consistently.

### **Michigan Leads the Way in Database Management**

The Michigan High School Athletic Association (MHSAA) provides a fine example of how to keep a database of school sports-related head injuries. Beginning with the 2015-2016 school year, MHSAA mandated that member schools report on student-athlete head injuries, identifying the percentage of head injury by sport, gender and team level (varsity, junior varsity or freshman), and if the injury occurred during practice or as the result of competitive play. The report also includes information on when the student is eligible to return to play.<sup>4</sup>

---

<sup>1</sup> [“111 N.F.L. Brains, All But One Had Brain Damage.”](#) *New York Times*. 25 July 2017.

<sup>2</sup> [“Aaron Hernandez Had Severe C.T.E. When He Died at Age 27.”](#) *New York Times*. 21 Sept. 2017.

<sup>3</sup> [“N.F.L. Official Affirms Link Between Playing Football and C.T.E.”](#) *New York Times*. 14 Mar. 2016.

<sup>4</sup> [The Michigan High School Athletic Association member schools 2015-2016 report on student-athlete head injuries](#)

“The MHSAA is a private, not-for-profit corporation of voluntary membership by more than 1,400 public and private senior high schools and junior high/middle schools which exists to develop common rules for athletic eligibility and competition. No government funds or tax dollars support the MHSAA, which was the first such association nationally to not accept membership dues or tournament entry fees from schools. Member schools which enforce these rules are permitted to participate in MHSAA tournaments, which attract more than 1.4 million spectators each year.”<sup>5</sup>

The goal is to build a database to help identify trends and reduce the number of head injuries incurred in school sports. As schools varied in their personnel and resources (some had an athletic administrator or trainer, some not), it was left to each member school to decide who would report head injuries and when, as long as the findings were reported by the end of the season.<sup>6</sup> A follow-up to the initial report was also mandated once the student-athlete was cleared to return to play. Only head injuries diagnosed as concussions were included in the database.

In addition to the database, MHSAA completed a sideline concussion testing and detection program, and also provides insurance to every member high school and junior high meant to cover deductibles and co-payments generated by injuries during play not covered by other policies.

Finally, all new head coaches at member schools receive instruction on identifying concussions, while all coaches are trained in how to care for athletes with suspected head injuries.

## **APPROACH**

**The Grand Jury interviewed representatives from the following entities:**

- Marin County Office of Education

**A Survey was sent to the following school districts:**

- Novato Unified School District - Novato and San Marin High Schools
- San Rafael City School District - San Rafael and Terra Linda High Schools
- Shoreline Unified School District - Tomales High School
- Tamalpais Union School District - Tamalpais, Redwood, and Drake High Schools

---

<sup>5</sup> [The Michigan High School Athletic Association member schools 2015-2016 report on student-athlete head injuries](#)

<sup>6</sup> [Michigan High School Athletic Association Head Injury Reporting System 2016-2017 School Year Summary Report](#)

## DISCUSSION

The 2015-16 Grand Jury recommended various improvements to the handling of the problem of head injuries, including education, monitoring, neurocognitive baseline testing, and tracking of data. The 2017-18 Grand Jury issued a survey addressing many of the same issues. Following is a summary of the recommendations and responses from the 2015-16 report as well as the relevant responses from the recent survey. (A complete copy of the survey questions and answers can be found in the Appendix.)

<b>2015-16 Recommendation 1: Each district should require mandatory annual neurocognitive testing of all high school athletes and mandatory retesting post-injury</b>			
<b>Novato</b>	<b>San Rafael</b>	<b>Shoreline</b>	<b>Tamalpais</b>
Not mandatory	Implemented	Implemented	Too expensive

**Analysis of 2015-16 Response:** San Rafael and Shoreline implemented the recommendation, while Novato replied that testing is not mandatory. Tamalpais responded that they offer annual neurocognitive testing to all high school athletes. Tamalpais utilizes ImPact (Immediate Post-Concussion Assessment and Cognitive Testing), “the most widely used and most scientifically validated computerized concussion management tool available.”<sup>7</sup> The school district said it would be too expensive and “logistically challenging” to test annually. Student athletes are tested twice during their four years of high school with a Post-Injury Test after a concussion diagnosis, per ImPact’s recommendations.

As for retesting post-injury, Tamalpais, San Rafael and Shoreline responded that they always retest, and Novato responded that they sometimes retest.

### 2017-18 Survey Response:

<b>Do you currently have a program for mandatory annual neurocognitive testing of players in high risk sports?</b>			
<b>Novato</b>	<b>San Rafael</b>	<b>Shoreline</b>	<b>Tamalpais</b>
All high risk programs	All high risk programs	All high risk programs	No*
<b>Do you perform neurocognitive testing post-injury?</b>			
<b>Novato</b>	<b>San Rafael</b>	<b>Shoreline</b>	<b>Tamalpais</b>
Sometimes	Always	Always	Never

\*“Not mandatory...Testing offered every season of sport for every sport...No student is refused the opportunity to take the test...There is a cost associated with the test (\$30.00)...”

<sup>7</sup> [ImPact Applications website](#)

**2015-16 Recommendation 2: A certified athletic trainer should administer and interpret all tests**

Novato	San Rafael	Shoreline	Tamalpais
At San Marin High School, one of the co-Athletic Directors administers and interprets all tests. At Novato High School, the certified athletic trainer, with the help of the Athletic Director, administers and interprets all tests.	Implemented	Implemented	All baseline tests and retests are reviewed by qualified UCSF medical staff as a component of the UCSF "PlaySafe" program.

**Analysis of 2015-16 Response:** San Rafael and Shoreline implemented this recommendation. Novato has one of the co-athletic directors interpret tests at San Marin High School, while the certified athletic trainer, assisted by the athletic director, administers and interprets all tests.

**2017-18 Survey Response:** This was not addressed in the survey.

**2015-16 Recommendation 3: A certified athletic trainer should attend high-risk high school sporting events.**

Novato	San Rafael	Shoreline	Tamalpais
“[T]here are times when high-risk sporting events occur simultaneously and it would not be possible for the athletic trainer to attend all events.”	Implemented	Implemented	”[S]chool-site Athletic Directors meet regularly with their Certified Athletic Trainers to identify high risk sport coverage for all home games.”

**Analysis of 2015-16 Response:** All school districts except for Novato comply with this recommendation. Novato responded that there is “sometimes” a certified athletic trainer at high-risk high school sporting events.

**2017-18 Survey Response:**

<b>Do you have a certified athletic trainer available to perform these tests at high risk sporting events?</b>			
Novato	San Rafael	Shoreline	Tamalpais
Sometimes	Always	Always	Always

**2015-16 Recommendation 4: Each district should add the cost of neurocognitive testing to its annual budget.**

Novato	San Rafael	Shoreline	Tamalpais
Requires further analysis	Disagree but looking into it	Implemented	Duly noted

**Analysis of 2015-16 Response:** While San Rafael disagreed with this recommendation, both they and Novato said they would look into it. Shoreline already implemented this recommendation, and Tamalpais cryptically replied “duly noted.”

**2017-18 Survey Response:** This was not addressed in the survey.

**2015-16 Recommendation 5: Each district should hire a certified athletic trainer for each of its high schools.**

Novato	San Rafael	Shoreline	Tamalpais
Yes	Yes, part-time	Yes	Yes

**Analysis of 2015-16 Response:** All school districts have hired full-time (Novato, Shoreline and Tamalpais) or part-time (San Rafael) certified athletic trainers.

**2017-18 Survey Response:** This was not addressed in the survey.

**2015-16 Recommendation 6: Each district should adopt a protocol for reporting a head injury so that all relevant persons are informed of a student’s head injury and can work together as a team to ensure full recovery in the classroom and on the field.**

Novato	San Rafael	Shoreline	Tamalpais
Implemented	Implemented	Implemented	Implemented

**2017-18 Survey Response:**

Do you have a written protocol for reporting, treating, and monitoring head injuries?			
Novato	San Rafael	Shoreline	Tamalpais
Yes	Yes	Yes	Yes

All four school districts continue to comply with this recommendation.

**2015-16 Recommendation 7: Each school should adopt Return-to-Play and Return-to-Learn Protocols for all athletes.**

Novato	San Rafael	Shoreline	Tamalpais
Implemented	Implemented	Implemented	Implemented

**Analysis of 2015-16 Response:** All four school districts have adopted these protocols.

**2017-18 Survey Response:**

Do you have written Return-to-Learn and Return-to-Play protocols?			
Novato	San Rafael	Shoreline	Tamalpais
Yes	Yes	Yes	Yes

**2015-16 Recommendation 8: Mandatory concussion education for student-athletes such as the Barrow Brainbook, the HEADS UP concussion training or some other equivalent education should be adopted by each school district. No student-athlete should begin participation before completing this education.**

Novato	San Rafael	Shoreline	Tamalpais
Letter to be signed by parents.	Students receive mandatory training.	We hope to pilot materials next year for adoption in the 2017-18 school year.	No

**Analysis of 2015-16 Response:** San Rafael and Shoreline have mandatory concussion education for student-athletes, while Novato and Tamalpais do not.

**2017-18 Survey Response:**

Do you have mandatory concussion education for student athletes?			
Novato	San Rafael	Shoreline	Tamalpais
No	Yes	Yes	No

Shoreline has added mandatory concussion education for student-athletes, while Novato and Tamalpais still have not.

The survey also asked about concussion awareness education for parents. San Rafael and Shoreline have such a program, while Novato and Tamalpais do not.

**2017-18 Survey Response:**

Do you have a program to educate parents regarding concussion awareness?			
Novato	San Rafael	Shoreline	Tamalpais
No	Yes	Yes	No

**2015-16 Recommendation 9: The Marin County Office of Education should collect head injury data and compile the data in a centralized database. Data should include date of injury, sport, type of injury, diagnosis, recovery information and other critical details. The data should be reported to MCAL and CIF for analysis and summary and the results published for the public annually while keeping all names of students confidential.**

Novato	San Rafael	Shoreline	Tamalpais
No	Collection by the Marin County Office of Education would be of great value for our high school district. There may be other options as well, such as the Marin County Public Health Department. The challenge is that this information also has to remain at the school site within a structured set of protocols and procedures for our SRCS staff/ team.	Shoreline Unified School District does collect data on student injuries. There would be benefit to have countywide statistics on such injuries. However to be of benefit, the data would have to be consistent from one site to another.	Maintains their own database

**Analysis of 2015-16 Response:** The Marin County Office of Education does not maintain a head-injury database.

**2017-18 Survey Response:** This was not addressed in the survey.

## **FINDINGS**

- F1. No consistent concussion protocol is used across the County.
- F2. Policies for testing for concussion are applied inconsistently across the County.
- F3. Return-to-Play and Return-to-Learn protocols are available to all student athletes.
- F4. Lack of available head injury data at the schools prevents analysis of the effectiveness of current head injury practices and procedures.
- F5. Not all school districts have added the costs of post-injury neurocognitive testing to their budgets.

## **RECOMMENDATIONS**

- R1. The Marin County Office of Education should provide state-of-the-art head injury protocols and make them available for use at all schools.
- R2. School districts should provide head injury data to the Marin County Office of Education.
- R3. The Marin County Office of Education should maintain a database of head injuries provided by the school districts.
- R4. Novato School District should require mandatory annual neurocognitive testing of all high school athletes in high-risk sports and mandatory post-injury testing.
- R5. Tamalpais Union School District should require mandatory annual neurocognitive testing of all high school athletes and mandatory post-injury testing.
- R6. Novato School District should add the cost of neurocognitive testing to their annual budget.
- R7. Tamalpais Union School District should add the cost of neurocognitive testing to their annual budget.
- R8. A certified athletic trainer should be present at all high-risk sporting events.
- R9. Novato School District should provide mandatory concussion education for student athletes and parents.
- R10. Tamalpais Union School District should provide mandatory concussion education for student athletes and parents.

## **REQUEST FOR RESPONSES**

Pursuant to Penal code section 933.05, the grand jury requests responses as follows:

From the following governing bodies:

- Marin County Office of Education (R1, R3)
- Novato Unified School District (R2, R4, R6, R8, R9)
- San Rafael City School District (R2, R8)
- Shoreline Unified School District (R2, R8)
- Tamalpais Union School (R2, R5, R7, R8, R10)

The governing bodies indicated above should be aware that the comment or response of the governing body must be conducted in accordance with Penal Code section 933 (c) and subject to the notice, agenda and open meeting requirements of the Brown Act.

From the following individuals:

- Marin County Superintendent of Schools (R1, R3)

Note: At the time this report was prepared information was available at the websites listed.

Reports issued by the Civil Grand Jury do not identify individuals interviewed. Penal Code Section 929 requires that reports of the Grand Jury not contain the name of any person or facts leading to the identity of any person who provides information to the Civil Grand Jury. The California State Legislature has stated that it intends the provisions of Penal Code Section 929 prohibiting disclosure of witness identities to encourage full candor in testimony in Grand Jury investigations by protecting the privacy and confidentiality of those who participate in any Civil Grand Jury investigation.

## APPENDIX: 2017-18 Summary Survey Responses

<b>1. Please identify the high risk sports at your school.</b>			
<b>Novato</b>	<b>San Rafael</b>	<b>Shoreline</b>	<b>Tamalpais</b>
Football	Football	Football	Football
Lacrosse	Lacrosse	Basketball	Lacrosse
Soccer	Soccer	Soccer	Soccer
Wrestling	Wrestling		Wrestling
Basketball	Basketball		Basketball
	Water Polo		Baseball, Softball
<b>2. Do you currently have a program for mandatory annual neurocognitive testing of players in high risk sports?</b>			
All high risk programs	All high risk programs	All high risk programs	No*
<b>3. Do you perform neurocognitive testing post-injury?</b>			
Sometimes	Always	Always	Never
<b>4. Do you have a certified athletic trainer available to perform these tests at high risk sporting events?</b>			
Sometimes	Always	Always	Always
<b>5. Do you have a written protocol for reporting, treating, and monitoring head injuries?</b>			
Yes	Yes	Yes	Yes
<b>6. Do you have written Return-to-Learn and Return-to-Play protocols?</b>			
Yes	Yes	Yes	Yes
<b>7. Do you have mandatory concussion education for student athletes?</b>			
No	Yes	Yes	No
<b>8. Do you have a program to educate parents regarding concussion awareness?</b>			
No	Yes	Yes	No
<b>9. How have students responded to concussion education and neurocognitive testing?</b>			
Positive	Positive	Neutral/Unknown	Neutral/Unknown

\*“Not mandatory...Testing offered every season of sport for every sport...No student is refused the opportunity to take the test...There is a cost associated with the test (\$30.00)...”

As can be seen above, responses to several of the questions were mixed. Though there are differences of opinion with respect to treatment of youth head injuries, it seems unlikely that the “best practices” protocols would vary this much.