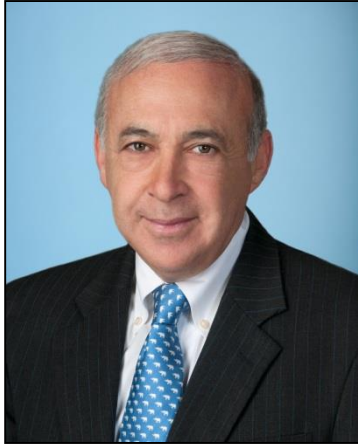


# Andrew Reisner, MD, FACS, FAAP

## Medical Director of Neurotrauma Programs

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### Pediatric Neurosurgeon at Children's Healthcare Atlanta

- Dr Reisner has been instrumental in advancing pediatric neurotrauma care and research across the South East. He spearheaded the Neurotrauma Programs at Children's Healthcare of Atlanta and maintains an active clinical surgical program with focuses on trauma, brain tumors and craniofacial abnormalities.
- A Traumatic Brain Injury Fund was established in his honor by grateful patient families for whom Dr. Reisner played a life-saving role. Resources from this fund enhance care and improve care for children who have suffered a traumatic brain injury.

# Children's Healthcare of Atlanta Concussion Conference 2019

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**Andrew Reisner, MD, FACS, FAAP**

Medical Director, Neurotrauma Programs

Elaine and John C. Carlos Chair for Neurotrauma

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# Greetings from Atlanta, Georgia USA

# Greetings from Children's Healthcare of Atlanta

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- Tertiary hospital serving a metro area of > 6 million
- Level 1 Trauma Center
- 604 total beds (including 74 ICU, 27 cardiac ICU and 80 NICU beds)
- 2017:
  - 26,553 inpatient admission
  - 1,378 pediatric neurosurgical procedures (total)
  - 2 Neurotrauma programs
- Severe TBI Program: Admissions – 243
- Concussion Program
  - Emergency Dept. - 1,413
  - Concussion Nurse Line Calls - 8,234



# Housekeeping

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- Cell Phones
- Video and photography
- Professional Credits
- Presentations online
- Speakers time
- Questions for the Panel
- Bathrooms
- Disclosures

# Disclosures

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## **Andrew Reisner, MD**

- Children's Healthcare of Atlanta (CHOA) Friends Research Grant
- Carlos Chair for Neurotrauma
- NIH R21NS103507: Osteopontin as a Blood Biomarker in Pediatric Trauma Brain Injury

## **Chia-Yi Kuan, MD, PhD**

- NIH R01NS084744: Mechanisms and Experimental Therapy of Perinatal Cerebral Hemorrhage
- NIH R21NS093446: Microglia-Monocyte Interactions following Perinatal Brain Injury
- NIH R01NS095064: Crosstalk of Innate and Adaptive Immunity in Infection-Sensitized Neonatal HIE
- NIH R21NS100419: Monocyte-Derived Microglia after Maternal Immune Activation and Neonatal HIE

## **Iqbal Sayeed, PhD**

- VHA: RX2002389: Therapeutic Actions of GSK-3 Inhibition in rmTBI

**Laura Blackwell, PhD:** No disclosures

There are no other financial interests to disclose.

# Special Thanks to our Supporter

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*Andee's* ARMY  
Child Brain  
& Spinal Cord  
Foundation

- Atlanta-based 501(c)3 non-profit dedicated to funding the recovery and rehabilitation of children who have sustained brain and spinal cord injuries.
- Provide grants tailored to the unique individual recovery of each patient.

# CHOA Experience

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“The farther backward you can look, the farther forward you can see.”

- Winston Churchill

## **Severe TBI program – 10 years ago**

- 4 years after inception – 1<sup>st</sup> guidelines passed by CHOA’s Medical Executive Committee

## **Concussion program – 6 years ago**

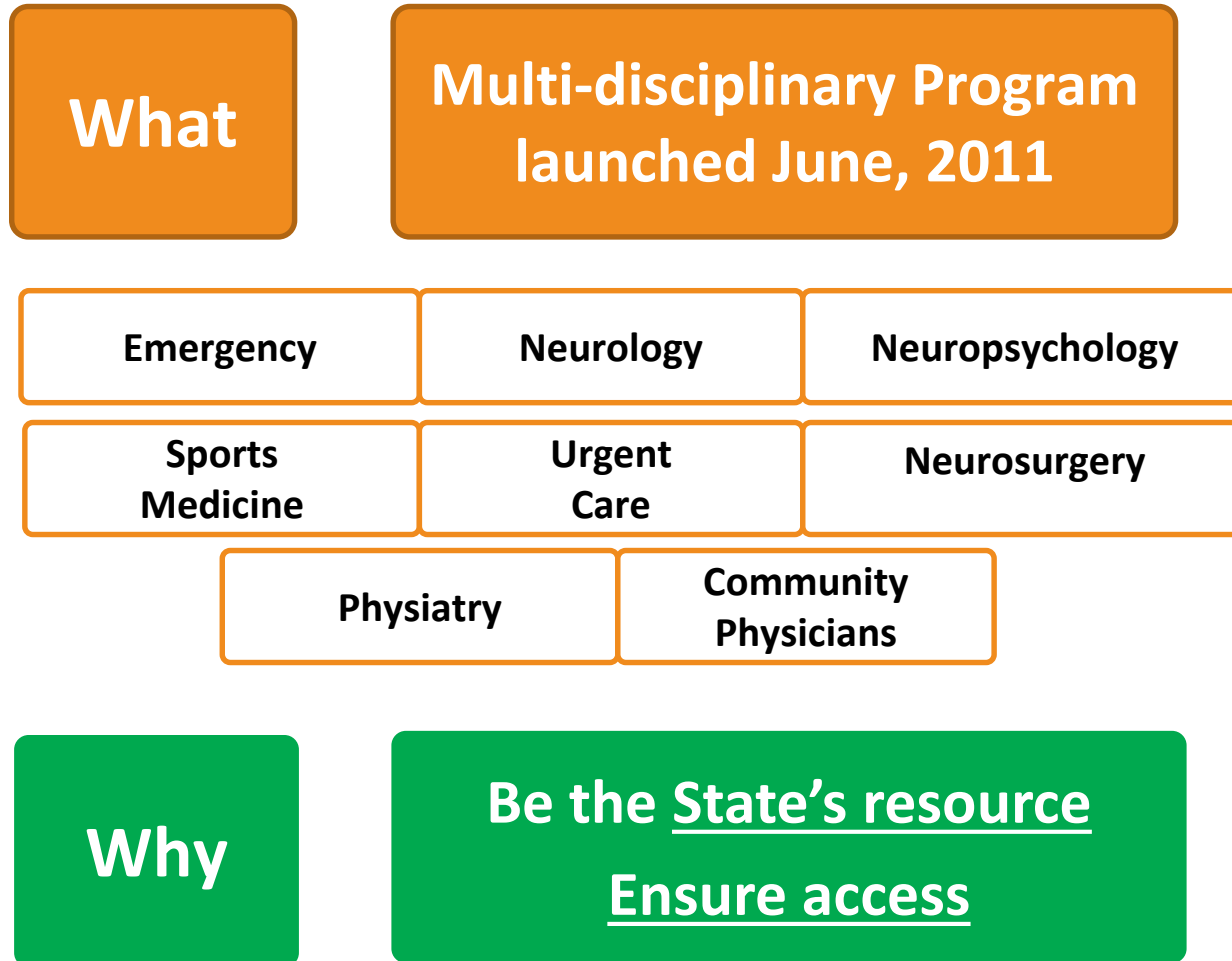
- CHOA Concussion Program endorsed by GA Dept of Health #1 on Google search

**The present...**

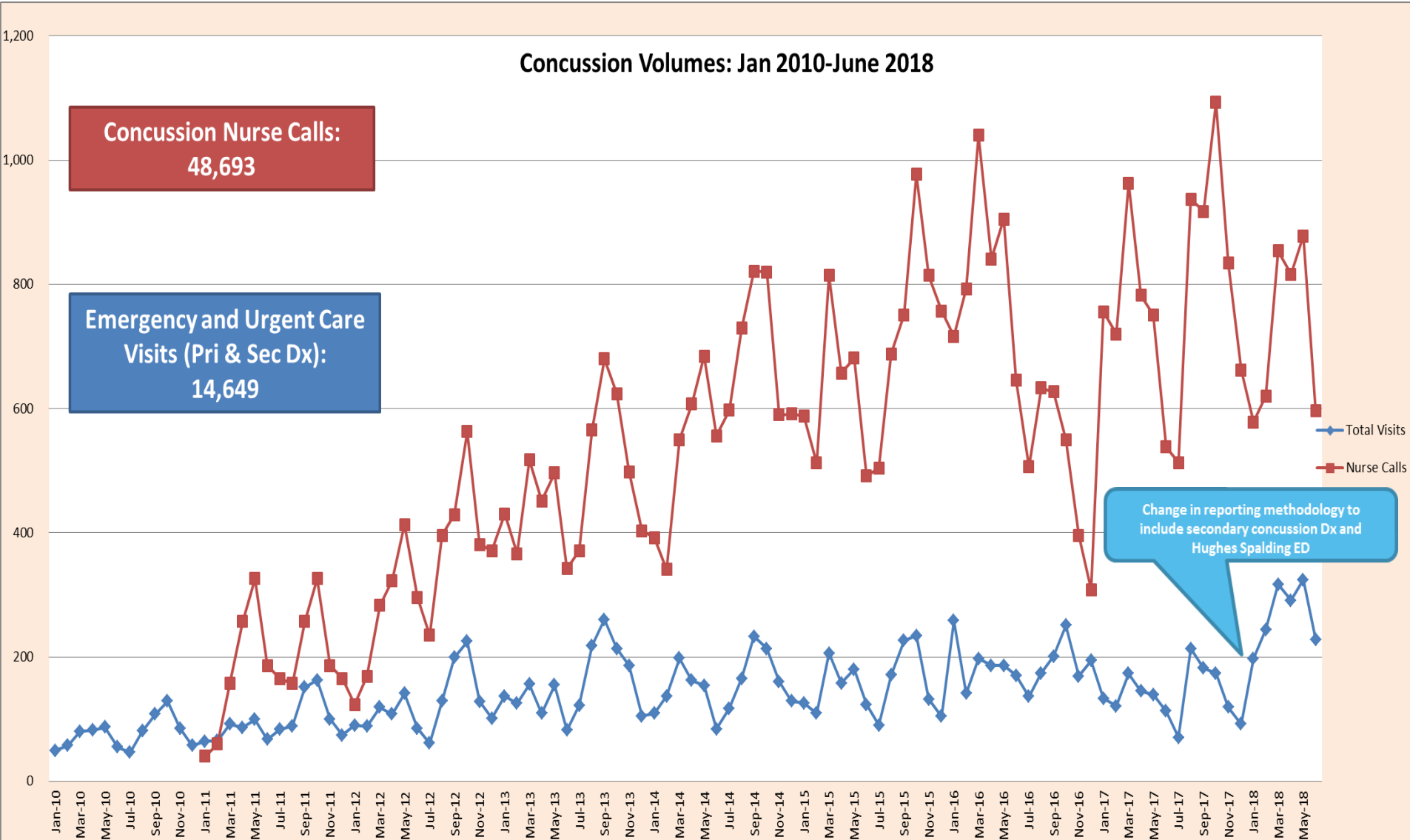


# Children's Concussion Program:

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# Concussion Program: Total Volume



## Return to physical activity following concussion

### Football

Stage	Activity	Football specific exercise	Objective of the stage
1	<ul style="list-style-type: none"> <li>No physical activity</li> <li>Complete physical and cognitive rest</li> </ul>	<ul style="list-style-type: none"> <li>No activity</li> </ul>	<ul style="list-style-type: none"> <li>Recovery and elimination of symptoms</li> </ul>
2	<ul style="list-style-type: none"> <li>Light aerobic activity</li> </ul>	<ul style="list-style-type: none"> <li>10 to 15 minutes of walking at home or at field, or stationary bike</li> </ul>	<ul style="list-style-type: none"> <li>Add light aerobic activity and monitor for symptom return</li> </ul>
3	<ul style="list-style-type: none"> <li>Moderate aerobic activity</li> <li>Light resistance training</li> </ul>	<ul style="list-style-type: none"> <li>20 to 30 minutes of jogging with helmet</li> <li>Light weight lifting (one set of 10 reps)</li> </ul>	<ul style="list-style-type: none"> <li>Increase aerobic activity and monitor for symptom return</li> </ul>
4	<ul style="list-style-type: none"> <li>Noncontact football-specific drills</li> </ul>	<ul style="list-style-type: none"> <li>Moving in/out of three-point stance, bear crawls through tunnel, tires, step over bags (vertical and lateral), QB/center exchange, QB drop backs, passing, break downs and plant, jump cuts, backpedaling, match the hips, up/downs</li> </ul> <p><small>*Start without helmets; progress to helmets and whack if symptom-free</small></p>	<ul style="list-style-type: none"> <li>Maximize aerobic activity</li> <li>Accelerate to full speed with change of directions (cuts)</li> <li>Introduce rotational head movements</li> <li>Monitor for symptoms</li> </ul>
5	<ul style="list-style-type: none"> <li>Limited contact football drills</li> </ul>	<ul style="list-style-type: none"> <li>Stage 4 workout in full pads</li> <li>Hit/push pads then sled (focus on technique—head up, square up, stay low), step and hit, run and hit, leverage drill, punch drill</li> </ul>	<ul style="list-style-type: none"> <li>Maximize aerobic activity</li> <li>Add deceleration/rotational forces in controlled setting</li> <li>Monitor for symptoms</li> </ul>
6	<ul style="list-style-type: none"> <li>Full contact practice (after medical clearance)</li> </ul>	<ul style="list-style-type: none"> <li>Normal training activities</li> </ul>	<ul style="list-style-type: none"> <li>Frequent assessments throughout the practice</li> <li>Monitor for symptoms</li> </ul>
7	<ul style="list-style-type: none"> <li>Return to play</li> </ul>	<ul style="list-style-type: none"> <li>Normal game play</li> </ul>	<ul style="list-style-type: none"> <li>Assess frequently</li> <li>Monitor for symptoms</li> <li>Consider one side of the ball only, no special-teams play</li> </ul>

## Concussion Toolkit

For Healthcare Providers

**DPH** A comprehensive concussion guide for healthcare professionals. These materials have been endorsed by the Georgia Department of Public Health.

choa.org/concussion



Concussion Reference

Concussion Care | Child's Health

https://www.choa.org/concussion

Children's Healthcare of Atlanta

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## Concussion

Give every head injury major attention. Our team is dedicated to getting your child safely back to activities.

### Diagnose

**When should I call a doctor?**

If you suspect your child has a concussion, talk to your child's doctor. All head injuries should be taken seriously. In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away.

**What is a concussion?**

A concussion is an injury to the brain. It can be caused by a blow or bump to or around the head. This causes the brain to move inside the skull which can change how the brain works or processes information.

For Medical Professionals

Go To

- Diagnose
- Take Action
- Our Unique Approach
- Treat
- Prevent

Children's Healthcare of Atlanta<sup>SM</sup>  
Sports Medicine

## Concussion

### Signs and symptoms evaluation

404-785-KIDS (5437)  
choa.org/concussion

ImPACT<sup>SM</sup>

**Signs observed by staff**

- Appears dazed or stunned
- Confused about assignment
- Forgets plays
- Is unsure of game or opponent
- Moves clumsily
- Answers questions slowly
- Loses consciousness (even temporarily)
- Shows behavior or personality changes
- Forgets events prior to hit (retrograde amnesia)
- Forgets events after hit (anterograde amnesia)

**Symptoms reported by athlete**

- Headache
- Nausea
- Balance problems
- Dizziness
- Double vision
- Fuzzy vision
- Sensitivity to light or noise
- Feeling sluggish
- Feeling foggy
- Change in sleep pattern
- Concentration problems
- Memory problems

**Symptoms may worsen with exertion. The athlete should not return to play that day and must be cleared by a physician before returning to activities.**

In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away. ©2018 Children's Healthcare of Atlanta Inc. All rights reserved. SP4 964292.kc.05/16



# Emphasis on Research

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- Presentations
- Publications
- Book Chapters
- Grants

# Partner with Community

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31 Affiliated Schools

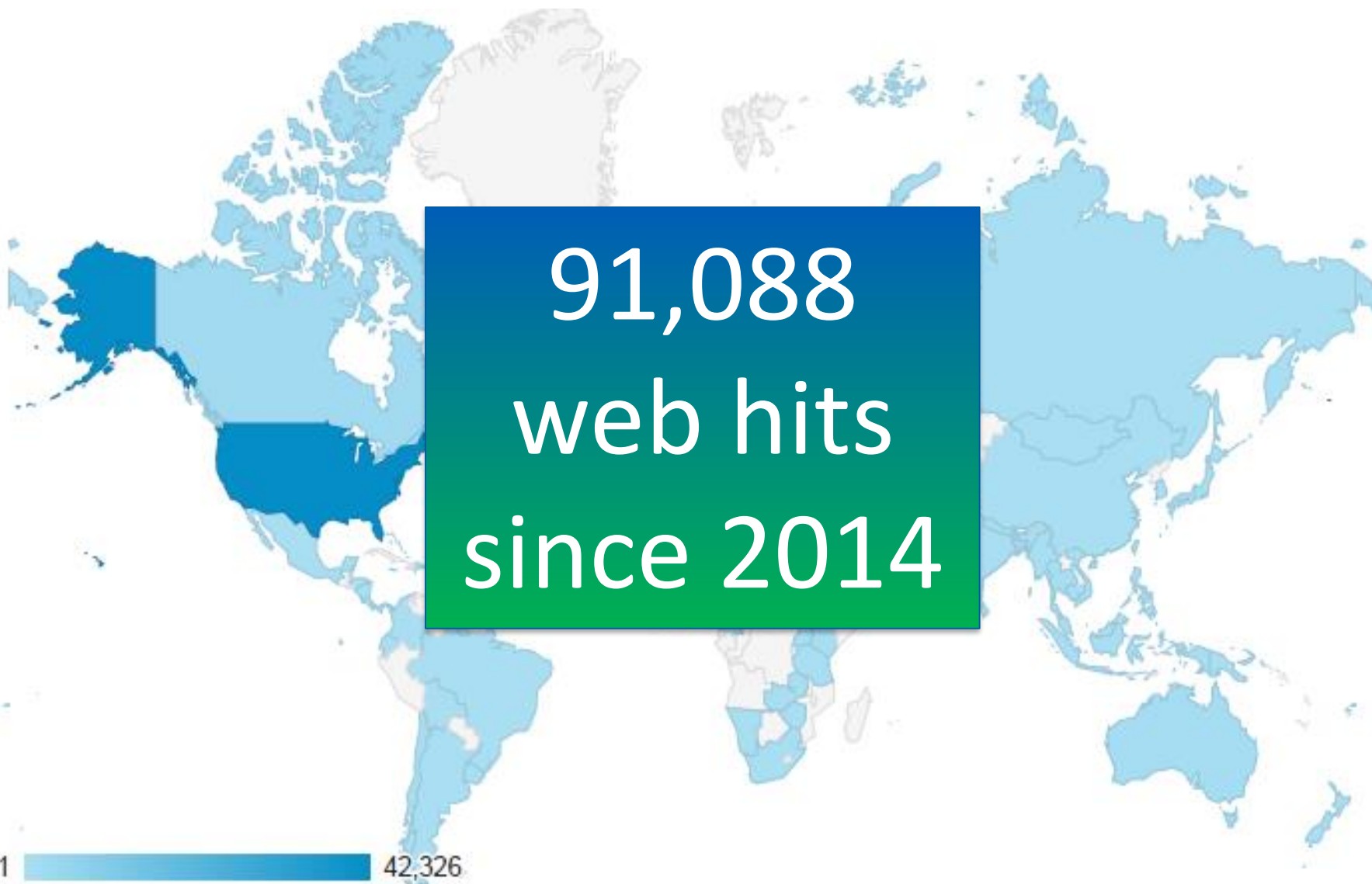
6 Swim Clubs

11 Gymnastic Clubs

6 Dance Clubs

# Program Reach

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A world map where countries are shaded in various intensities of blue. The United States and Alaska are shaded in the darkest blue, indicating the highest number of web hits. A large, semi-transparent blue and green rectangular box is overlaid on the map, containing white text. A legend at the bottom left shows a color gradient from light blue to dark blue, with the number '1' on the left and '42,326' on the right.

91,088  
web hits  
since 2014

1 42,326

# Concussion: Not as innocuous as previously thought

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- Second impact - Possibly due to impaired autoregulation / hyperemia
- Predominantly seen in pediatric/ adolescent patients