



HOUSE OF REPRESENTATIVES

STATE OF HAWAII
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Rep. Marilyn B. Lee
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TO: Chair Roy Takumi and members of the Committee on Education

FROM: Representative Marilyn Lee *Marilyn B. Lee*

TESTIMONY IN SUPPORT OF HB2494

January 30, 2008

2 PM

Room 309

I speak in favor of HB2494, which would require the Department of Education to implement a concussion evaluation tool for high school student athletes, especially those who play football.

The Centers for Disease Control and Prevention estimates that about 300,000 sports-related concussions are suffered each year. The main culprits are boxing, football and hockey, though athletes in basketball and baseball can suffer concussions through rigorous play.

Studies at the University of Pittsburgh have indicated that "neurocognitive testing is crucial for kids' safety given the potential unreliability of self-reported symptoms." Dr. Mark Lovell, author of the Pittsburgh study says: "it is concerning that most return-to-play decisions have relied heavily on the athletes' self-report of symptoms."

Dr. Thomas Hammeke, Professor of Neurology at the Medical College of Wisconsin, said "the problem is most common in football, a sport that demands physical contact on every down."

Concussions can cause life long disability, especially if they occur one after another and the brain does not have time to heal.

We should do everything possible to protect our student athletes from life long injuries.

My own son suffered an injury in football at the high school level. Though not a head injury, he suffered through two major surgical procedures and a life-long problem with his knees. On the day he was first injured, he came home alone. No one had evaluated his condition—and no one ever called to see how he was doing. I am thankful that was not a concussion.

Neurocognitive Testing Is Crucial For Kids' Safety Given The Potential Unreliability Of Self-Reported Symptoms, Says University Of Pittsburgh Study

14 Sep 2006

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When it comes to managing concussions in sports, relying only on an athlete's self report of symptoms is inadequate and likely to result in under-diagnosing the injury and the athlete unsafely returning to play following the concussion, warn doctors at the University of Pittsburgh Medical Center (UPMC) Sports Medicine Concussion Program. Along with assessing symptoms, the doctors stress, using computer-based neurocognitive function testing is crucial for accurate, objective evaluation of concussion and determining a safe return-to-play time for the athlete.

"Because of the tendency of some athletes to under-report their symptoms, presumably in an attempt to speed their return to the playing field, neurocognitive testing following suspected concussion is particularly important in keeping kids safe," said Mark Lovell, Ph.D., director of the UPMC Sports Medicine Concussion Program. Research has shown at least one in 10 high school or college athletes sustains a concussion each year.

Dr. Lovell's alert is based on a recent UPMC study of concussed high school and college athletes that showed unreliability of the athletes' self-reported symptoms and demonstrated the value of neurocognitive testing in significantly increasing the capacity to detect post-concussion abnormalities, decreasing the potential of exposure to additional injury. Previous research has shown that young concussed athletes who are returned to play too soon, before their brains have healed, are highly vulnerable to further injury, including post-concussion syndrome, or in rare cases, fatal second-impact syndrome. The current study is published in the upcoming issue of the *American Journal of Sports Medicine*, available online at <http://www.ajsm.org/>.

"Given our study results, it is concerning that most return-to-play decisions following concussion have relied heavily on the athlete's self report of symptoms. In fact, in many sports settings, return-to-play decisions have been based almost exclusively on what the athlete says," said Dr. Lovell, author of the study. "This research further proves what we have learned from years of experience in our clinic - that even athletes who report being symptom free may continue to exhibit neurocognitive deficits that they are either unaware of or are failing to report."

Although neurocognitive testing has been recognized in recent years as a cornerstone of concussion management by the leading international Concussion in Sport groups, the UPMC study is the first to formally evaluate the sensitivity and specificity of computer-based neurocognitive testing when used in combination with the athlete's report of symptoms.

The current study involved 122 concussed high school athletes, all of whom had undergone pre-season neurocognitive function baseline testing with ImPACTTM (Immediate Post-Concussion Assessment and Neurocognitive Testing) as well as ImPACT testing again post-concussion to compare to baseline. Sixty-four percent of the concussed athletes reported a significant increase in symptoms compared to their pre-injury baselines at two days post-injury. Eighty-three percent of the concussed athletes demonstrated significantly poorer neurocognitive test results relative to their own baseline performance. Therefore, the addition of neurocognitive testing resulted in a net increase in sensitivity of 19 percent. The use of both symptom and neurocognitive test scores resulted in an increased sensitivity of 29 percent over reliance on symptoms alone. In contrast, zero percent of a control group of 70 non-concussed athletes demonstrated both symptoms and abnormal neurocognitive testing.

A concussion is any alteration of mental status resulting from the brain being jolted inside of the skull due to a blow to the head or upper body. Symptoms can include amnesia, dizziness, confusion, headache, nausea, disorientation and sometimes loss of consciousness.

"Generally, an athlete who sustains an initial concussion can fully recover as long as the brain has had

time to heal before sustaining another hit," explained Micky Collins, Ph.D., study co-author and assistant director of the UPMC Sports Medicine Concussion Program. "The tricky part is that concussion signs and symptoms are not always straightforward and the effects and severity of the injury can be difficult to determine. Symptoms can typically occur with no visual indication by medical personnel and traditional neurodiagnostic tests such as CT, MRI and EEG are generally insensitive in measuring the subtle neurological changes following injury; thus, the need for careful clinical evaluation of symptoms in addition to objective neurocognitive testing."

Neurocognitive testing with ImPACT, as in the UPMC study, is utilized nationwide by more than 900 high schools, 250 colleges and universities, 125 professional sports teams, including the majority of NFL teams, 250 sports medicine clinics and numerous other national and international athletic organizations. ImPACT involves a 30-minute test battery that athletes complete on a laptop or desktop computer. It can precisely measure even the subtle effects of a concussion, such as decline in memory, visual motor skills, information processing speed and reaction time, as well as symptom levels. Athletes can take an individual pre-season baseline test whose data is stored for comparison to post-injury test scores, should an athlete sustain a concussion during the season.

"A concussed athlete should never be cleared for return to play until neurocognitive scores on tests such as ImPACT match pre-injury baseline scores and all reported symptoms have resolved both at rest and at exertion," stressed Dr. Collins.

"Other factors that especially concern us are related to information we've learned, with the aid of ImPACT, in numerous previously published UPMC research studies - notably that younger athletes are more vulnerable to further injury post-concussion and require longer recovery time than older athletes, and even seemingly mild concussions, or 'bell ringers,' need to be taken very seriously since deficits on ImPACT can be seen several days or even weeks post-injury," said Dr. Lovell. "These and other UPMC findings have led to a re-examination of traditional return-to-play guidelines and a reconsideration of return-to-play standards that were heavily symptom-based."

Article adapted by Medical News Today from original press release.

Other authors of the current UPMC study are Jamie Pardini, Ph.D., and Freddie Fu, M.D., both of UPMC and the University of Pittsburgh School of Medicine's department of orthopaedic surgery, and Derk Van Kampen, who is completing his medical training in the Netherlands.

ImPACT, developed by Dr. Lovell more than a decade ago, is the first and most widely used computerized sports concussion evaluation system. ImPACT Applications, Inc., is a Pittsburgh-based company that owns and licenses the ImPACT tool, and is partly owned by Drs. Lovell and Collins. Dr. Lovell is assistant professor in the department of orthopaedic surgery at Pitt's School of Medicine, where Dr. Collins is a clinical instructor. More information is available at <http://www.impacttest.com/>.

The UPMC Sports Medicine Concussion Program, established in 2000, is an ongoing clinical service and research program that focuses on the diagnosis, evaluation and management of sports-related concussions in athletes of all levels. More information is available at <http://newsbureau.upmc.com/MediaKits/ConcussionMain.htm>.

Contact: Susan Manko
University of Pittsburgh Medical Center

Article URL: <http://www.medicalnewstoday.com/articles/51692.php>

Main News Category: Sports Medicine / Fitness

Also Appears In: Neurology / Neuroscience,

Date of Hearing: January 30, 2008

Committee: House Education

Department: Education

Person Testifying: Patricia Hamamoto, Superintendent

Title: H.B. 2494, Relating to School Sports Concussions

Purpose: Requires department of education to implement a concussion evaluation tool for each high school student athlete participating in the sport of football statewide. Appropriation.

Department's Position: The Department of Education (Department) does not support H.B. 2494, due to the present language in the bill. Concussions affect all student athletes of both genders, not only football players. In a study published in the *Journal of Athletic Training* last month, L.M. Gessel, et al. found that in sports played by both sexes, girls sustained a higher rate of concussions. In the Department, there were 265 concussions (4.9% of all injuries), from July 2007 to January 2008, in various sports (football, 61%; basketball, 14%; wrestling, 7%; cheerleading, 7%; soccer, 5%; volleyball, 4%; and cross country, 1%). To address only football would neglect the health and safety needs of the entire population of student athletes participating in contact sports. Currently there are seven high schools pilot testing the Immediate Post-Concussion Assessment and Cognitive Testing (ImPact) program. The athletic health care trainers (AHCTs) at

these schools have mixed reviews about the use of this product. While the program provides an objective piece of data for AHCTs to share with the student athlete, parent, coach and physician, interpreting the data has been the major concern. Most primary care physicians (pediatricians, family practice physicians) and all AHCTs do not have formal training in neuropsychological testing and there are an insufficient number of neuropsychologists that can interpret the data in a timely manner.

Lastly, baseline testing of 400 to 800 student athletes during the pre-season, would be extremely time consuming for the AHCT. This would leave less time for injury assessment, rehabilitation of student athletes and practice/game coverage. ImPact states testing will be take approximately 20 to 25 minutes, but AHCTs have found it takes them 30 to 45 minutes, depending on the student being tested.

In summary, the Department does not support H.B. 2494 in its present form.

Person Testifying: Darryl T. Funai, President, Hawaii Athletic Trainers' Association

Regarding: HB 2494 – Relating to School Sports Concussions

Purpose: To require the Department of Education to implement a concussion evaluation tool for each high school student athlete participating in football statewide.

Statement:

The Hawaii Athletic Trainers' Association (HATA) supports the intent of the bill but has concerns regarding the present form of H.B. 2494.

In a recent study published in the Journal of Athletic Training, concussions represented 8.9% of all high school athletic injuries and 5.8 % of all collegiate athletic injuries. The majority of concussion resulted from participation in football (40.5%), followed by girls' soccer (21.5%), boys' soccer (15.4%), and girls' basketball (9.5%). To focus only of football would ignore almost 60% of all concussions according to this study.

In another study in the Journal of Athletic Training, performance on computerized neuropsychological (NP) tests may be affected by a number of factors including sex, SAT scores, fatigue at the time of testing, and the athletes sport, thus relying solely on NP testing is contraindicated. They recommend that a proper concussion assessment protocol should include data from multiple assessment techniques, such as self-reported symptoms, postural control, and NP testing.

In summary, HATA supports the intent of the bill, however, is opposed to testing only football athletes. Furthermore, relying on NP testing as the ultimate authority in assessing concussed athletes has been proven to be unreliable. For these reasons, HATA proposes the State create a committee of physicians, neuropsychologists, and certified athletic trainers to develop and implement a standard concussion assessment protocol to be followed by all certified athletic trainers and physicians.

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HB 2494 Relating to School Sports Concussions

HOUSE OF REPRESENTATIVES
THE TWENTY-FOURTH LEGISLATURE
REGULAR SESSION OF 2008

COMMITTEE ON EDUCATIO

DATE: January 30, 2008
TIME: 2:00 PM
PLACE: Conference Room 329
State Capitol
415 South Beretania Street

My name is Patricia Lockwood and I am the Executive Director of Hawaii Centers for Independent Living, a non-profit organization operated by and for people with disabilities to ensure their rights to live independently and fully integrated in the community of their choice, outside of institutional care settings. As a non-profit, statewide resource, HCIL serves people of any age with any type of disability. HCIL was founded on the historical constitutional beliefs of civil rights and the empowerment of people with disabilities to have equal access, opportunities, and choices in life, no matter how severe their disability.

This is a key piece of disability community. You generally hear me testifying about legislative issues concerning issues which effect people with disabilities. This legislation would help us prevent disability. When we were all younger no one thought about the different times we hit our heads. It was thought to be a sign of toughness to see how many times you could take a blow to the head and not be knocked out. Medical evidence now shows us that even seems like small blows to the head and shoulders can result in injuries to the brain.

Think of your brain like pieces of Jello that are held together and in place by your skull. When you hit your head or violently move your head and shoulders back and forth those sections of Jello move within the skull. The microscopic connections between the sections of "jello" stretch and break.

Now think that if you don't catch the problem when it first happens how much more stretching and breaking can occur if you hit your head..again..and again. This is what happens when people are not removed from the activity.

I know this seems like something we don't need. We have all those highways to pay for...all those studies to see if we really need services. Each case that is made here at the legislature is compelling and vitally important to the person making their case.

I will ask you this...What is the cost of a brain injury over the long run...in the lost wages,,in frustration of people who don't learn like they used to...in families who see their loved one change and don't know why. Please remember that our youth are our investment in the future.



HILOPA'A

Family to Family Health Information Center

Date: January 29, 2008

To: COMMITTEE ON EDUCATION

Rep. Roy M. Takumi, Chair

Rep. Lyla B. Berg, Ph.D., Vice Chair

Fr: Leolinda Parlin, State Coordinator for Family Voices of Hawai'i

Re: HB 2494 – Support to require the department of education to implement a concussion evaluation tool for each high school student athlete participating in the sport of football statewide.

On behalf of Family Voices of Hawai'i, I support HB 2494.

As an organization, Family Voices is national grass roots organization of family of friends of child with special health care needs. In Hawai'i, we operate the federally funded Hilopa'a Family to Family Health Information Center.

The Center for Disease Control shares the following information in its monograph Concussion and Sports:

1. During 2001-2005, children and youth ages 5-18 years accounted for 2.4 million sports-related emergency department (ED) visits annually, of which 6% (135,000) involved a concussion.
2. High school athletes' recovery times for a sports concussion are longer than college athletes' recovery times.
3. High school athletes who sustain a concussion are three times more likely to sustain a second concussion.
4. In organized high school sports, concussions occur more often in competitive sports, with football accounting for more than 60% of concussions.
5. Lack of proper diagnosis and management of concussion may result in serious long-term consequences, or risk of coma or death.

As parents and friends of children with special health care needs, we strongly support any initiative that prevents disability. Traumatic Brain Injury in many instances, can be avoided and this measure is a step in the right direction. As a state, our hearts all stopped, when the beloved Colt Brennan received a head injury. Every child in our state desires that same level of attention and intervention.

Thank you for time and consideration in supporting HB 2494.

berg1-Liz

From: gbeachy@punahou.edu
Sent: Monday, January 28, 2008 4:13 PM
To: EDNtestimony
Subject: HB 2494

The following is my testimony for HB 2494. Hearing scheduled for Wed.

Person Testifying: Glenn Beachy, Head Athletic Trainer, Punahou School

Regarding: HB 2494 - Relating to School Sports Concussions

Purpose: To require the Department of Education to implement a concussion evaluation tool for each high school student athlete participating in football statewide.

Statement:

Neurocognitive testing (NCT) for concussions is an assessment tool used to assist the family physician in the evaluation of concussions and to assist in the athlete's safe return to activity.

While this is an extremely useful tool, it is only one tool used in the treatment of a concussion episode.

Any legislation requiring a concussed student to complete the neurocognitive test before returning to activity would dictate to the medical community the tests and tools required for treatment of this injury. In effect, it overrides any decision made by the physician regarding the concussive episode and would set a precedent for medical treatment.

Concussions are not unique to football players and dictating policy to a limited population is contraindicated. At Punahou, concussions account for 1% of all injuries reported by female athletes and 1.85% of injuries reported by male athletes. True, football is the highest risk sport, with concussions accounting for 2.8% of all football injuries. However, concussions account for 2.19% of all injuries to male soccer players and 2.35% of all injuries for female soccer players. Girls water polo players have a 2.65% concussion rate.

It is not physically possible, or necessary, to administer a test to all athletes participating in contact sports. Time, personnel and equipment are all constraints to this process. This further raises the risk of liability to the school and state if, for some very valid reason, it is impossible to complete the testing protocol for an athlete or for a school.

This may be possible in the collegiate setting, but we should not be dictating policy to this population either.

Education about the test and its meaning is essential for the NCT to have any validity within the medical community. While Punahou uses the ImPact neurocognitive test to assist with return to activity determination, the family physician is the ultimate authority.

For these reasons, I am opposed to HB 2494.

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January 28, 2008

Rep. Roy Takumi
Chair, House Education Committee
Hawaii State Legislature
Honolulu, HI 96813

Dear Rep. Takumi:

Re: HB 2494

I am writing in opposition to HB 2494.

I am a clinical neuropsychologist at Straub Clinic and Hospital. I have been assisting the Athletic Health Care Trainer Coordinator for the DOE, Mr. Ross Oshiro, with regard to the evaluation of sports-related concussions. I am very familiar with the computerized neuropsychological test battery known as ImPACT, which is a well-established assessment tool for concussions suffered by athletes. I gave a lecture presentation on the ImPACT to all the DOE athletic health care trainers last year, and I have submitted a research paper on ImPACT to the Hawaii Medical Journal for possible publication.

I am opposed to HB 2494 because

1. The proposed neuropsychological evaluations are limited to football head injuries. Participants of other sports, particularly basketball, baseball and soccer, are also vulnerable to head injury, and should not be excluded from these evaluations.
2. The neuropsychological evaluations are limited to the use of the ImPACT test battery. While ImPACT is a very effective neuropsychological test battery, there is a variety of other effective testing instruments that clinical neuropsychologists employ for the assessment of brain injury. The psychologists should not be limited to the use of ImPACT.
3. The bill does not address the involvement of clinical neuropsychologists who are needed to interpret the results of the neuropsychological testing. We cannot presume that there are enough clinical neuropsychologists available to assist athletic trainers at every school. Even if enough clinical neuropsychologists were available, the bill does not offer cost estimates of employing these psychological specialists. The supporters of this bill might be planning to consult mainland neuropsychologists to interpret the computerized ImPACT results, a practice that has its inherent limitations, e.g., the mainland psychologists' unfamiliarity with the unique sociocultural composition of student-athletes in Hawaii.

If you wish to contact me, my phone number is 522-4521, email wtsushima@straub.net, or fax 522-3526.

William T. Tsushima, Ph.D.