

REPORT

Spring 2005

Equipping you with the latest research and standards on athletic equipment

NOCSAE Standards

NOCSAE develops performance standards for protective equipment used in a variety of sports. All NOCSAE standards and proposed standards are available on the Web site (<http://www.nocsae.org>) in PDF format and can be easily downloaded. The three levels of NOCSAE standards are Draft (a working document), Proposed Status (a formalized document for the purpose of obtaining written comments from manufacturers, governing bodies and other interested parties. Each standard is held in Proposed Status for a minimum one-year period), and Final Status (elevated from Proposed and becomes effective one year after vote for elevation). Please refer to the web site for a complete list of all standards, their status and effective dates.

All NOCSAE standards and proposed standards are available at nocsae.org in PDF format and can be easily downloaded.

At the Winter 2005 NOCSAE Meeting, the Board Members voted on the following:

Standard Performance Specification for Newly Manufactured Lacrosse Helmets with Faceguards (ND041-04m04b).

This standard and related documents were approved to be effective June 1, 2005.

Standard Performance Specification for Recertified Baseball/Softball Batter's and Catcher's Helmets (ND026-04m04b).

This standard was voted into Final Status, to be effective January 1, 2006.

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NOCSAE Research

In its effort to commission research, NOCSAE solicits grant proposals from any and all qualified investigators from any institution. The scope of the grants considered for funding include basic and/or applied research bearing a relationship towards increasing our understanding of sports injury mechanisms and injury prevention through the use of protective sports equipment. Priority is given to proposals focusing on recurring injury where the injury is either "catastrophic," "serious," and/or "costly."

Awards are based upon scientific merit as ranked by a national panel of experts and upon the priorities of the NOCSAE Board of Directors. ■

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Newly Supported Research Studies

At the Winter 2005 NOCSAE Meeting, the NOCSAE Board voted to fund the following research proposal:

Cervical Spine Instability and Equipment Use: A Comparison of Prehospital Transfer Procedures In a Cadaver Model.

Principal Investigator: MaryBeth Horodyski, EdD, ATC/L, University of Florida.

Spinal disorders are one of the six research priorities identified in the Unified Research Agenda. Spinal injury is considered catastrophic because of the related mortality, morbidity and extreme cost associated with treatment. Critical issues of spinal care involve emergency treatment in the crucial moments following initial injury. It has been reported that 3-25 percent of cervical spine injuries actually occur after the original traumatic event and are caused or exacerbated by improper handling during the early stages of management or patient transport. Therefore, traditional emergency care procedures such as spine-board transfer techniques come into question. Most of what is known about the kinetics of the

unstable cervical spine has been gleaned from research examining airway management techniques, stabilization techniques and equipment removal procedures.

The main objective of this project is to determine to what extent spinal instability affects cervical spine movement caused by prehospital transfer procedures. All test conditions described below will be completed on cadavers with intact cervical spines and then with a complete segmental injury created at C5-C6. The specific aims are to assess the displacement, distraction and angular motion occurring at C5-C6 during 1) the log-roll maneuver (LR), lift-and-slide technique (LS), and The Motorized Spine Board (TMSB) transfer; 2) the application of cervical collars and the effectiveness of the collars to control neck motion during various transfer procedures; 3) spine-boarding procedures comparing two different hand positions of the "head" rescuer; and 4) prehospital procedures when a helmet and football shoulder pads are worn. The results of this research will improve emergency management of spinal disorders and advance understanding of how the spine can be stabilized after an injury so that precipitation or exacerbation of neurological injuries can be avoided. ■

The main objective of this project is to determine to what extent spinal instability affects cervical spine movement caused by prehospital transfer procedures.

NOCSAE Standards

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Standard Performance Specification for Newly Manufactured Hockey Face Protectors (ND035-04m04).

This standard was voted into Final Status, to be effective January 1, 2006.

Standard Performance Specification for Newly Manufactured Polo Helmets (ND050-04am04).

This standard was revised.

The following Standards have had modifications not requiring Board approval:

Baseball and Softball Face Protectors (ND072-04).

Standard Performance Specification for Newly Manufactured Lacrosse Face Protectors (ND045-04m04b).

Standard Drop Test Method and Equipment Used in Evaluating the Performance Characteristics of Protective Headgear (ND001-04m05). ■

Recent Publications From Studies Supported by NOCSAE

The following are some recent publications by researchers whose work has been supported in part by NOCSAE. Please note that the views expressed in these publications are solely those of the authors and do not necessarily represent the views of the NOCSAE Board.

- *Various Types of Football Helmets, Face Masks, and Face Mask Loop Straps, and Their Effects on the Efficiency of Face Mask Removal*
Swartz EE, Norkus SA, Cappaert TA, Decoster LC. *Journal of Athletic Training*; 39(Suppl), 2004
- *Shock-Absorbing Effects of Various Padding Conditions in Improving Efficacy of Wrist Guards*
Hwang HK, and Kim KJ. *Journal of Sports Science and Medicine*; 323-29, 2004
- *Commercially Available Chest Wall Protectors Fail to Prevent Ventricular Fibrillation Induced by Chest Wall Impact (Commotio Cordis)*
Weinstock J, Maron BJ, Song C, Mane PP, Estes MNA, and Link MS. *Heart Rhythm*; 1(abstract 692), 2004
- *Influence of Ball Velocity, Attention, and Age on Response Time for a Simulated Catch*
Owings TM, Lancianese SL, Lampe EM, and Grabiner MD. *Medicine Science Sports and Exercise*; 35(8), 1397-1405, 2003. ■

Ongoing Research Studies

Continuation of the United States commotio cordis registry.

Principal Investigator: Barry Maron, M.D., Minneapolis Heart Institute Foundation.

This registry has become the primary national registry for commotio cordis epidemiology and has permitted the emerging profile of commotio cordis to have a "home" and ultimately to generate greater insights into the mechanisms and frequency of this condition.

Catastrophic football injuries – 1987-2001.

Principal Investigator: Fred Mueller, Ph.D. University of North Carolina at Chapel Hill.

This grant reviews all (357) direct catastrophic football injuries reported to the National Center for Catastrophic Sports Injury Research (NCCSIR) for the school years 1989-1990 through 2001-2002.

Acute effects and recovery after concussion in high school athletes: A clinical and functional magnetic resonance imaging (fMRI) study.

Principal Investigator: Michael McCrea, Ph.D., ABPP, Waukesha Memorial Hospital, Waukesha, WI.

The scientific aim of this study is to utilize innovative fMRI techniques and standardized testing (e.g., neuropsychological, postural stability, and symptom assessment) to gain a better understanding of the acute effects and recovery from sports-related concussion, both clinically and neurophysiologically.

The influence of environment and regular use on football equipment over a full season of participation and its relation to face mask removal efficiency.

Principal Investigator: Erik E Swartz, PhD, ATC, University of New Hampshire.

The specific aims of the project are to assess the ability to remove face masks following one season of play in high school football helmets using a cordless screwdriver. The secondary purpose of the study will be to identify factors that affect the football helmet and associated hardware in relation to the ability to remove the face mask.

Further details on these and other research studies supported by NOCSAE can be found at <http://www.nocsae.org>. ■

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FAQs and FACTS

Is there a new NOCSAE standard for football helmets?

No, NOCSAE is evaluating field data and test systems that might result in a future expansion of the testing to include measurements and limits geared toward reducing mild traumatic brain injuries (also referred to as concussion injuries).

Do I need to buy a new helmet that meets the new NOCSAE Lacrosse Helmet Standard?

No. Each helmet manufacturer certifies that their helmet meets the NOCSAE standard at the time the helmet was manufactured. Every helmet that bears the NOCSAE logo meets the standard and is legal now; next year; and until the life of the helmet, as stipulated by the manufacturer, has expired; your own inspection indicates replacement; or the helmet is rejected by a recertification agency.

Is there a helmet I can buy for Football or Lacrosse that prevents concussions?

No, there is no helmet system that prevents concussions. There are designs and efforts to create helmets that might reduce the risk of some concussions.

As a consumer should I look for the NOCSAE logo on protective equipment to be sure it meets NOCSAE standards?

Yes, the logo should be visible and clear. The logo and/or the words "meets NOCSAE standard" on the product are your only indication the product meets the rigorous requirements of NOCSAE.

There is no requirement in our helmet standards for the frequency of recertification or reconditioning. The NOCSAE seal on a new helmet means that the manufacturer has certified that the new helmet met the standards when it was manufactured. The need for reconditioning will vary due to usage and wear. It is recommended that each school or organization utilize a system to inspect their helmets on a regular basis and make their reconditioning decisions based on that schedule and the manufacturers' recommendations.

Isn't there a special helmet standard for youth helmets?

No. The NOCSAE standard is the same for all helmets in the same sport; it does not distinguish between youth and adult helmets. Junior high school players' helmets meet the same standard as those used by the pros.

How is NOCSAE funded and what happens to the money it receives?

NOCSAE is a charitable non-profit organization under IRS section 501(c) (3). It receives funding through gifts and grants, and royalty fees paid on license agreements it has with manufacturers of equipment that meet the NOCSAE standard. These license agreements allow licensees to use our logos, seal and name on their products in exchange for their agreement to follow our standards and certify their products to our standards. The fees received are used to fund research in the areas of sports injury and prevention and to fund operating expenses associated with the research program, education (e.g. newsletter and Web site), technical support for licensees, development and maintenance of the NOCSAE Standards, and legal and daily operations. NOCSAE does not underwrite the development of new products. Since 1994, NOCSAE has committed more than \$1,000,000 to research grants and contracts. The results of this research can be found at the NOCSAE Web site, <http://www.nocsae.org>. ■

Research Funds Available

Applying for Funding? Due to the diversity and complexity of potential research proposals, NOCSAE has instituted a two-phase application procedure. Those interested in seeking funding are required to first submit a Preliminary Grant Application. This brief, one page proposal is reviewed by the NOCSAE Board of Directors. From these preliminary proposals, the Board votes to invite full proposals based upon the funds available and upon the Board's goals for that funding cycle. An external scientific study section reviews the invited full proposals. The final decision for funding is made by the NOCSAE Board of Directors based upon these reviews and the Board's goals.

The Preliminary Grant Proposal consists of **1)** a cover page with an estimated budget for not more than two years of funding, **2)** a one-page proposal listing background and significance of the proposed work, hypothesis and/or specific aims and a concise description of research design and methods, and **3)** a two-page biographical sketch of the Principal Investigator only.

After review by the NOCSAE Board of Directors, full proposals will be invited by August 2005. Invited proposals will be due for external review in November 2005, with funding anticipated in February 2006. ■

Preliminary Grant Applications Due May 13, 2005.

Further details on the grant application process can be found at <http://www.nocsae.org>.

Future NOCSAE Meetings

- The Summer 2005 NOCSAE Meeting will be held June 17-18, 2005 in Indianapolis, IN.
- The Winter 2006 NOCSAE meeting will be held Jan. 6-7, 2006. The location has not yet been determined.

Byron Goldman Research Award Established

In memory of Byron Goldman, former NOCSAE Executive Board Member and Executive Director of NAERA, the NOCSAE Board has established the “Byron Goldman Research Award” in recognition of Byron’s long time and enthusiastic support of both NOCSAE and its collective mission to support research. The first recipient of this award is Erik E Swartz, PhD, ATC, of the University of New Hampshire for his work entitled “The influence of environment and regular use on football equipment over a full season of participation and its relation to face mask removal efficiency.” ■

Recertification/Reconditioning

NOCSAE standards for several types of headgear include test methods, performance criteria and procedural guides for use by reconditioners who recertify headgear. The National Athletic Equipment Reconditioners Association (NAERA) has a long and close relationship with NOCSAE that fosters ongoing compliance with NOCSAE standards as equipment is subjected to the rigors of use season after season. The reconditioners follow a shortened version of the NOCSAE test that is similar to the manufacturer’s protocol. They maintain a database of information indicating how helmets have been maintained as outlined in the NOCSAE manual. Copies of the NOCSAE manual are available by contacting the Executive Director. The manual provides an overview of

NOCSAE and some common sense recommendations that if followed, in addition to using compliant products, will aid in the reduction of injury.

NAERA members have been beta testing new software and hardware used for a data acquisition system called HITS (Helmet Impact Test System). These custom-made computer based setups have shown themselves to be reliable and repeatable. While some beta sites have experienced hardware issues and one site found a major software bug, all reported problems have been addressed and the system is ready for wider distribution. ■

To learn more about NAERA visit their Web site at <http://www.NAERA.net>. If you have technical questions regarding NOCSAE recertification contact the Technical Advisor.



This newsletter is a publication of the National Operating Committee on Standards for Athletic Equipment (NOCSAE), a Non-Profit Corporation.

The mission of the National Operating Committee on Standards for Athletic Equipment (NOCSAE) is to commission research on and, where feasible, establish standards for protective athletic equipment. To this aim, the Committee fosters and encourages the dissemination of information on research findings on athletic equipment, injury data, and other closely related areas of inquiry through the organizations represented on the NOCSAE Board of Directors, and other entities in the fields of athletics and sports medicine.

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