

REPORT

Fall 2005

Equipping you with the latest research and standards on athletic equipment

FAQs and FACTS

Is there a helmet I can buy that prevents concussions?

No, there is no helmet system that prevents concussions.

Which helmet performs best under the NOCSAE standard?

The NOCSAE standard uses a PASS/ FAIL criterion so there is no determination as to which helmet is “better.” If your helmet has the NOCSAE logo then it meets the NOCSAE standard.

Can I wear my hockey helmet when I play lacrosse?

No, different sports pose different risks. Standards for helmets have been developed and have evolved for each specific sport, based upon the nature and history of the sport. Wearing helmets not certified for the particular sport places the player and, possibly other players, at an increased risk of injury, possibly severe and catastrophic.

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.

How often must a helmet be reconditioned or recertified?

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 intensity and amount of usage. 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. ■

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. Funded studies bear 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. ■

Future NOCSAE Meetings

The Winter 2006 NOCSAE meeting will be held
Jan. 6-7, 2006.

The location has not yet been determined. Contact Mike Oliver for details.

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Newly Supported Research Studies



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

Assessment of MTBI in Female Boxers.

Investigators – Marianne Wilhelm, Ph.D., Cynthia A. Bir, Ph.D., Albert I King, Ph.D., Wayne State University, Marilyn Boitano, M.D., USA Boxing

The objective of this proposal is to evaluate MTBI (subconcussive and concussive) in female amateur boxers in a prospective study to develop gender-specific recommendations for the prevention of MTBI. The specific aims are to: 1) Determine the location, frequency, and severity of impacts in

male and female amateur boxing events using an acceleration-based, real-time measurement system. 2) Perform both cognitive and clinical assessments of boxers before and after possible concussive impacts. 3) Determine whether or not the type, severity, and frequency of punches have a significant effect on cognitive and clinical assessments with gender as a co-variate.

One of the most important expected outcomes of this study is the development of female-specific guidelines for protective equipment and boxing regulations to aid in the prevention and identification of MTBI. The proposed research is innovative because female boxers have never been studied with respect to MTBI, yet MTBI is common, and almost expected, within the sport

of boxing. Previous studies that have focused on boxing have been limited to male boxers. The research proposed in this study is significant given the recent increase in the number of female boxers, and the desire to have equality with respect to bout guidelines. With the previous cases of subdural hematomas being reported and the recent death of a female boxer, this need is even more apparent. ■



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. Final funding decisions are made by the NOCSAE Board of Directors based upon these reviews and the Board's goals. ■

Preliminary Grant Applications Due May 5, 2006.

Ongoing Research Studies

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

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

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

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, Ph.D., 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 www.nocsae.org.

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.

- *Catastrophic Cervical Injuries in High School and College Football Players (1989-2002)*
Barry P. Boden, M.D., Robin Tacchetti, MS, PT, Robert Cantu, M.D., Sarah Knowles, Ph.D., Fred O. Mueller, Ph.D.
- *Football Equipment Design Affects Face Mask Removal.*
Erik E. Swartz Ph.D., ATC, Susan Norkus Ph.D., ATC, Tom Cappaert Ph.D., ATC, CSCS, Laura Decoster ATC.
2004 AOSSM Annual Meeting, June 24-27, 2004
- *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.
- *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.
- *Shock-Absorbing Effects of Various Padding Conditions in Improving Efficacy of Wrist Guards.*
Hwang HK, and Kim KJ. Journal of Sports Science and Medicine; 3(23-29), 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. ■

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 (www.nocsaе.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.
- **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.

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

Soccer Shin Guard Standard

This standard has been moved to final status, to be effective no sooner than January 1, 2007.

Lacrosse Ball Standard

A proposed standard has been published and is available for written comment. See the NOCSAE Web site for details. ■

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. Reconditioners follow a shortened version of the NOCSAE test that is similar

to the manufacture'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 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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