

PRESS RELEASE

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FOR IMMEDIATE RELEASE

**Epidemiological Study Tracks Upper Extremity Injury Trends
in NASCAR Drivers and Pit Crew**

*Hand Surgeon Glenn Gaston; PA William Heisel perform investigation to examine
musculoskeletal forces on bodies of motorsports athletes*

CHARLOTTE, N.C. (MAY 10, 2016) – Glenn Gaston, MD, Chief Hand Surgeon of the OrthoCarolina Hand Center, and William Heisel, PA, Director of OrthoCarolina Motorsports, have completed a descriptive epidemiological study of position-specific injuries in National Association for Stock Car Automobile Racing (NASCAR) drivers and pit crew. The project specifically investigated practice and race-sustained injuries to the upper extremities (shoulders, arms and forearms, wrists and hands) and patterns and frequencies of injuries relative to position on the car.

“According to PubMed there have been 3,953 studies on football injuries, 2,699 on soccer, 1,271 on baseball and 1,111 studies on basketball injuries,” said Dr. Gaston, who also serves as hand consultant to Joe Gibbs Racing, Hendrick Motorsports and Stewart-Haas Racing. “Only five publications to date exist on motorsports injuries, none of which have concentrated on the epidemiology of upper extremities.”

Most major professional sports have long-documented position-specific injuries in order to allow for treatment, prevention and decisions when to return an athlete to practice and play. Prior to the upper extremity motorsports study, little was known about similar trends in NASCAR despite the fact that the sport is one of the most popular in the United States, averaging 5.8 million viewers per race.

“NASCAR as sport offers a unique opportunity for us to research as every team except one is located in our region,” said Heisel, who oversees the OrthoCarolina Motorsports medical program and athlete care. “Our orthopedic group serves as the official team physicians for a majority of the starting cars at each race. Of the other 13 cars per race we see the overwhelming majority of their injuries as well but they do not necessarily have an official team physician.”

The Study

A more comprehensive picture of the musculoskeletal forces placed on the body of NASCAR athletes including drivers and pit crew helps teams and medical providers better plan and provide a targeted course of treatment, ultimately returning them to the race. A retrospective chart review of NASCAR patients between July 2003 and October 2014 was performed to assess position-specific, upper extremity injuries among crew and drivers. The research tracked diagnoses, mechanisms of injury and positions of each individual.

Results and Conclusion

A total of 226 NASCAR team members were treated for upper extremity issues in the July 2003 to October 2014 timeframe, with 118 injuries (52 percent) occurring during NASCAR events or practices. The breakdown of injuries by position included:

- Changers (42 percent)
- Drivers (16 percent)
- Carriers (14 percent)
- Jack men (11 percent)
- Fuel men (nine percent)
- Utility men (eight percent)

Orthopedic injuries in NASCAR vary between positions and can be linked to the demands of each role. The majority of pit crew positions are at risk for epicondylitis (pain in the lateral tendons of the forearm, also known as tennis elbow). Changers sustain the most hand-related injuries (42 percent) of all pit crew team members, while carriers are susceptible to finger issues (29 percent).

Drivers themselves are most likely to experience neuropathies such as hand-arm vibration syndrome from prolonged exposure to vibration, as well as carpal/cubital tunnel syndrome from long periods gripping a steering wheel. Neuromas may develop along areas of pressure along digits depending on the driver's grip technique. In 2012 impact-related injuries from crashes were responsible for 32 percent of driver injuries including scaphoid and distal radius fractures. Glove modifications for drivers including off-loader pads around pressure points may reduce the frequency of unique fractures such as hamate hook fractures, which are high in occurrence for such a relatively small subset of individuals.

With 36 races that take place in 10 months each season, each involving between five and 10 pit stops, a pit crew will perform approximately 73 unique maneuvers per stop. As pit stop times have become more important, teams have continued to recruit stronger, more athletic team members, and with increased demand comes higher incidence of task-specific upper body injuries.

“Injuries in NASCAR drivers and pit crew members are a consequence of the distinctive forces associated with each position throughout the course of the racing season,” said Dr. Gaston. “Understanding these forces and position-associated injuries is important for preventative measures. It facilitates diagnosis and return-to-play decisions so that each team can function at maximal efficiency.”

OrthoCarolina Motorsports provides care in team race shops during the week and trackside at races during the NASCAR season, including management of chronic, acute and major injuries, athletic training and physical therapy services, and specialist and primary care referrals. In its entirety the service line oversees medical care for NASCAR pit crews, drivers, team employees and officials as well as many of their family members. OrthoCarolina Motorsports has formal relationships with Joe Gibbs Racing, Hendrick Motorsports, Stewart-Haas Racing, Roush Fenway Racing and Richard Petty Motorsports.

For more information about the study including details and outcomes by position, contact logan.stewart@orthocarolina.com.

About OrthoCarolina

OrthoCarolina is one of the nation's leading independent academic orthopedics practices serving North Carolina and the Southeast since 1922. OrthoCarolina provides compassionate and comprehensive musculoskeletal care including operative and non-operative care, diagnostic imaging and rehabilitative therapy. Widely known for musculoskeletal research and training, OrthoCarolina physicians have specialized expertise in foot and ankle, hip and knee, shoulder and elbow, spine, sports medicine, hand, pediatric orthopedics, and physical medicine and rehabilitation. Our 130 OrthoCarolina physicians see nearly one million patient visits throughout western North Carolina each year.

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