

GAME-CHANGING IMAGING:

The Ultimate Guide to the
SMART-C® and ENDURO™ DR
in Sports Medicine

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CHAPTER 1

INTRODUCTION TO PORTABLE IMAGING IN ***SPORTS MEDICINE***



OVERVIEW OF PORTABLE IMAGING AND ITS SIGNIFICANCE IN SPORTS MEDICINE

Portable imaging has revolutionized the field of sports medicine by offering on-the-spot diagnostic capabilities, ensuring timely and accurate care for athletes. The ability to perform imaging directly on the field, in training rooms or during travel has significantly reduced downtime and improved the overall efficiency of sports injury management.

INTRODUCTION TO THE SMART-C®: FEATURES AND BENEFITS FOR ATHLETIC TRAINERS AND TEAM PHYSICIANS

The SMART-C® is an innovative, wireless, battery-operated mini C-arm that weighs only 16 lbs, making it incredibly portable. Designed specifically for fluoroscopy (motion

X-ray), the SMART-C® provides high-quality imaging for real-time diagnosis and treatment planning. Its portability allows athletic trainers and team physicians to use it during home games, away games and practice sessions, ensuring that athletes receive immediate care.

INTRODUCTION TO THE ENDURO™ DR: FEATURES AND BENEFITS FOR ATHLETIC TRAINERS AND TEAM PHYSICIANS

The ENDURO™ DR is a lightweight, battery-operated, portable X-ray system designed for radiography. It can be handheld (depending on each U.S. state's requirements) or mounted on a stand and operated with a hand switch, providing versatility and ease of use. The ENDURO™ DR offers high-quality radiographic imaging, making it ideal for diagnosing a wide range of sports injuries.

Use of Personal Protective Equipment (PPE), such as lead aprons, is recommended and governed by your institution and individual state. Contact your local and state radiology health division for portable X-ray use requirements.



HOW PORTABLE IMAGING ENHANCES ATHLETE CARE AND PERFORMANCE

Portable imaging devices, such as the SMART-C® and ENDURO™ DR, allow athletic trainers and team physicians to diagnose injuries quickly and accurately, reducing the time athletes spend off the field. Immediate access to imaging helps in making informed decisions about treatment plans, which can significantly enhance recovery times and overall athlete performance.



SMART-C® Key Features

- ✔ High-quality fluoroscopic imaging
- ✔ Lightweight and portable
- ✔ Wireless and battery-operated
- ✔ Easy to use in various settings

ENDURO™ DR Key Features

- ✔ High-quality radiographic imaging
- ✔ Lightweight and portable
- ✔ Wireless and battery-operated
- ✔ Can be handheld or mounted on a stand

SMART-C® BENEFITS

- ✔ Fluoroscopy enables team doctors to observe bones and joints in motion or while manipulating the injured area.
- ✔ Fracture reductions
- ✔ Weight bearing and stress views
- ✔ Joint injections

ENDURO™ DR BENEFITS

- ✔ A model for every need: ES70 is an ultra-lightweight model perfect for extremity imaging, while ES90 has the power to image any anatomy, including the chest cavity.
- ✔ High resolution static image
- ✔ Larger imaging area

BEST PRACTICES FOR USING THE SMART-C® AND ENDURO™ DR IN ATHLETIC TRAINING ROOMS



STEP-BY-STEP GUIDE TO INTEGRATING THE SMART-C® AND ENDURO DR™ INTO DAILY WORKFLOWS

- 1. Initial setup:** Ensure that both devices are fully charged and ready for use. Familiarize the staff with the operational procedures.
- 2. Daily checks:** Perform daily checks on both devices to ensure they are functioning correctly.
- 3. Imaging protocols:** Establish clear protocols for when and how to use the SMART-C® and ENDURO™ DR for different types of injuries.
- 4. Collaboration:** Promote collaboration between athletic trainers, team physicians and other medical staff to ensure seamless use of the devices.

TRAINING

- 1. Initial training:** Provide in-depth training sessions on the operation and features of both devices.
- 2. Hands-on practice:** Allow staff to practice using the devices in simulated scenarios.
- 3. Ongoing education:** Offer regular refresher courses and updates on new features and best practices.

TIPS FOR SETTING UP AND MAINTAINING PORTABLE IMAGING EQUIPMENT

- ✓ **Storage:** Keep the devices in a secure and easily accessible location.
- ✓ **Maintenance:** Regularly clean and inspect the devices to ensure optimal performance.

Consult state regulations for registration requirements.

BEST PRACTICES FOR ENSURING CONSISTENT AND EFFECTIVE USE

- ✓ **Standardized protocols:** Develop and implement standardized protocols for using the devices.
- ✓ **Regular assessments:** Conduct regular assessments to ensure staff are proficient in using the devices.
- ✓ **Feedback loop:** Establish a feedback loop where staff can share their experiences and suggest improvements.

AVAILABLE RESOURCES AND SUPPORT FOR ONGOING EDUCATION

- ✓ **User manuals:** Manuals available upon request for further information.
- ✓ **Customer support:** Ensure access to customer support for any technical issues or questions.

THE ECONOMIC BENEFITS OF PORTABLE IMAGING FOR SPORTS TEAMS



COST-BENEFIT ANALYSIS OF INVESTING IN PORTABLE IMAGING FOR SPORTS TEAMS

Investing in portable imaging devices like the SMART-C® and ENDURO™ DR can yield significant economic benefits for sports teams. The ability to perform immediate diagnostics reduces the need for off-site imaging, saving time and money.

FINANCIAL ADVANTAGES OF HAVING ON-SITE IMAGING CAPABILITIES

DIRECT COST SAVINGS

1. Reduced treatment costs

Elimination of external imaging facility

fees: Typically, teams need to transport athletes to external imaging facilities or hospitals for X-rays. These facilities often charge high fees for each imaging session, which can add up quickly, especially for frequent or multiple imaging needs.

2. Elimination of transportation fees

Transportation costs: Each trip to an external imaging facility incurs costs, including transportation fees, fuel and vehicle maintenance. For sports teams, especially those with frequent away games or practices, these costs can quickly add up.

Portable solution: The ENDURO™ DR and SMART-C® allow for on-site imaging, eliminating the need for transporting athletes to external facilities. This results in substantial savings on transportation fees over time.

3. Reduced emergency transportation costs

Emergency situations: In urgent cases where immediate imaging is required, emergency transportation services may be needed. This can be costly, especially for teams operating on tight budgets.

On-site imaging: By using the ENDURO™ DR or SMART-C®, teams can perform necessary X-rays on-site, avoiding the need for emergency transport and associated costs.

INDIRECT COST SAVINGS

1. Reduced downtime

Injury management: Transportation to an imaging facility often involves delays, which can extend the time athletes spend off the field. This downtime can impact the team's performance and overall success.

Delays with traditional workflow: Traditional imaging workflows often involve multiple steps, including external imaging, follow-up appointments and extended recovery times. This can lead to higher treatment costs due to additional medical visits and extended use of medical resources.

Swift diagnosis: Portable X-ray systems provide immediate access to imaging, allowing for quicker diagnosis and treatment. Reduced downtime means athletes can return to their activities sooner, minimizing the impact on team performance and reducing costs associated with extended absences.

2. Decreased disruption to team schedules

Schedule adjustments: When athletes need to visit an external imaging facility, it can disrupt practice schedules, game preparations and overall team coordination.

Uninterrupted routines: On-site imaging with the ENDURO™ DR and SMART-C® reduces the need for schedule adjustments, allowing teams to maintain their training and game routines without interruption. This efficiency can translate to better performance and fewer logistical issues.

Player readiness and availability: In the fast-paced world of professional sports, the ability to quickly and accurately diagnose injuries at the point of care can make the difference between a speedy recovery and a prolonged absence from the game.

CASE STUDIES FROM PROFESSIONAL SPORTS TEAMS

Real-life case studies from professional and collegiate sports teams demonstrate the use of the SMART-C® during games and practice sessions to treat athletes. To maintain team and athlete confidentiality, these case studies do not disclose any identifying information.

CASE STUDY 1

BASEBALL TEAM'S CRUCIAL MID-GAME DIAGNOSIS



During a high-stakes baseball game, a star pitcher awkwardly twisted his ankle while throwing a pitch. The team's medical staff needed a swift and accurate diagnosis to decide whether he could safely return to play.

The pitcher was taken into the training room where the team's orthopedic surgeon was able to X-ray through the pitcher's cleats. Within seconds, the high-resolution images revealed a minute hairline fracture. With this information, the medical staff and the athlete decided it was safe for the pitcher to finish the game, ultimately leading his team to victory. The SMART-C®'s quick and reliable diagnostic information not only saved the game but also ensured the player's health was not compromised.

CASE STUDY 2

STEEPLECHASE ACCIDENT (NAMES AND DETAILS USED WITH PERMISSION)

Theresa Dimpfel is a professional-level steeplechase jockey based out of Maryland. She competed in the Maryland Hunt Cup and was injured when her horse went down and rolled over her as it went over one of the later jumps in the race.

Dr. Erica Gaertner, the official physician for the National SteepleChase Association, used the SMART-C® in the medical tent at the race. Diagnostic imaging with the SMART-C® determined that Dimpfel suffered an acromioclavicular separation of her left shoulder.



"The SMART-C® allowed me to get an immediate, definitive diagnosis on the field, saving me from a lengthy and expensive ambulance ride to the hospital ER."

—Theresa Dimpfel, steeplechase jockey

CASE STUDY 3

SWIFT RECOVERY: HOW SMART-C® TRANSFORMED A CRITICAL MOMENT IN PROFESSIONAL FOOTBALL



During a critical moment in a professional football game, a player sustained an injury, which led to a temporary suspension of play. The injured player was being escorted off the field for examination in the training room with the team's standard radiographic X-ray equipment.

However, the team physician intervened, requesting the use of the SMART-C® instead due to the high image quality and motion imaging, which would give the physician more precise information about the athlete's condition. The physician positioned the player's ankle on the SMART-C® and immediately observed a dislocation. Utilizing fluoroscopy, the physician promptly realigned the player's ankle. Thanks to this swift and precise intervention, the player was able to return to the game during a pivotal moment.

CASE STUDY 4

PROTECTING THE FUTURE: HOW THE SMART-C® SAFEGUARDED A RISING FOOTBALL STAR'S CAREER



During a college football game, a quarterback sustained an injury to his thumb. Despite the player's assurance that he could continue playing, the team physician decided to utilize the SMART-C® mini C-arm for a thorough examination. The physician determined that the thumb was indeed injured and advised against the player continuing. Following this advice, the quarterback sat out for a few weeks, allowing his thumb to fully heal. His prudent recovery contributed to his outstanding performance, ultimately leading to his selection as a second overall draft pick in the NFL. The immediate availability of the SMART-C® played a crucial role in preventing a more severe injury and safeguarding the player's future career.

MAXIMIZING THE VALUE OF PORTABLE IMAGING IN SPORTS MEDICINE

As the world of sports continues to evolve, the demand for efficient, accurate and timely medical care has never been greater. Portable imaging systems such as the SMART-C® and ENDURO™ DR are at the forefront of this transformation, providing athletic trainers and team physicians with invaluable tools to enhance their medical practices.

UNLOCKING THE BENEFITS OF THE SMART-C® AND ENDURO DR™

Both technologies offer unique advantages that can significantly impact the way sports teams manage injuries and optimize athlete care. The SMART-C®'s advanced fluoroscopy capabilities allow for real-time imaging that is critical for immediate diagnosis and treatment. Its portability ensures that athletic trainers can perform detailed examinations directly on the field, in training rooms or during travel.

The ENDURO™ DR complements this by offering high-quality radiographic imaging that can be conducted on-site, whether handheld or mounted. Its versatility and ease of use further support quick and accurate diagnostics, reducing the need for external imaging facilities and the associated costs.

ACHIEVING COST EFFICIENCY AND OPERATIONAL EXCELLENCE

The integration of portable imaging systems into sports medicine practices offers considerable cost savings. By reducing facility and transportation fees, streamlining workflows and minimizing athlete downtime, teams can achieve substantial financial benefits. The immediate availability of imaging allows for faster diagnoses, which translates to quicker and more effective treatments. This efficiency not only improves the overall performance of athletes but also supports the financial health of sports organizations by cutting down on unnecessary expenses.

ENHANCING ATHLETE CARE AND PERFORMANCE

The core advantage of using the SMART-C® and ENDURO DR™ is their impact on athlete care. Quick and accurate imaging ensures that injuries are managed effectively, reducing the risk of complications and promoting faster recovery. This proactive approach to injury management helps athletes return to their optimal performance levels more quickly, benefiting the entire team.

TRAINING AND SUPPORT FOR SUCCESSFUL INTEGRATION

To fully leverage the benefits of portable imaging, it is essential for athletic staff to receive comprehensive training and ongoing support. Ensuring that all team members are proficient in using the SMART-C® and ENDURO™ DR will maximize the effectiveness of these tools and contribute to the overall success of the medical program. Investing in education and resources for staff will further enhance the efficiency and accuracy of injury management.

LOOKING AHEAD

As sports medicine continues to advance, the role of portable imaging systems will become increasingly pivotal. By incorporating the SMART-C® and ENDURO™ DR into their medical protocols, sports teams are positioning themselves at the cutting edge of injury management. These tools not only provide immediate benefits in terms of cost savings and operational efficiency but also play a crucial role in improving the quality of care provided to athletes.

The journey toward optimal athlete care is ongoing, and embracing innovative technologies like the SMART-C® and ENDURO™ DR is a significant step forward. By harnessing the power of portable imaging, sports teams can ensure that they are equipped to meet the demands of modern sports medicine, delivering the highest standard of care and achieving greater success on and off the field.

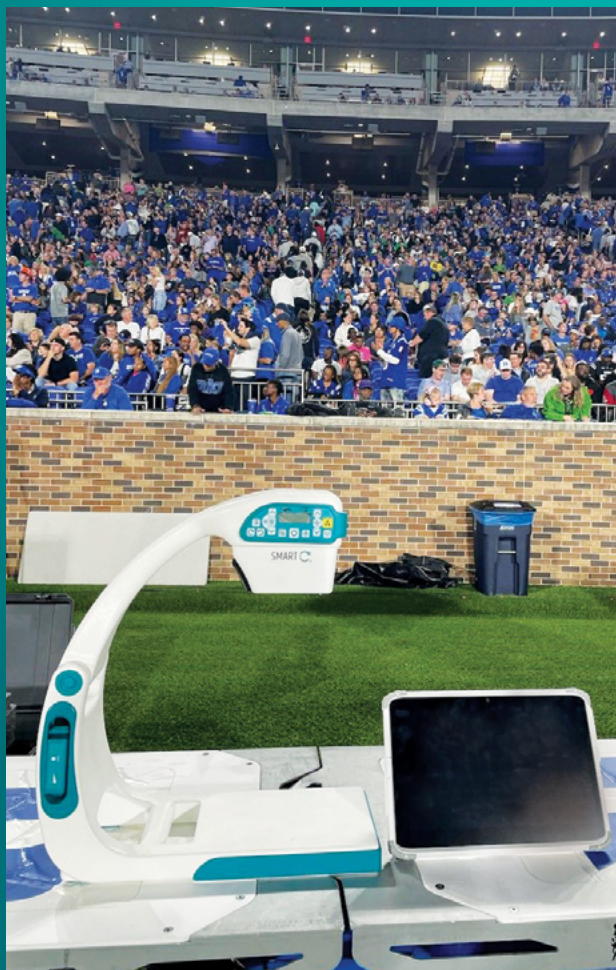


Use proper PPE with all radiology equipment. Contact your state radiology division for regulatory requirements regarding user training.



“THIS INNOVATIVE PRODUCT PROVIDES HIGH QUALITY IMAGES IN A HIGHLY PORTABLE MACHINE. TURNER IMAGING SYSTEMS’ SMART-C® IS BATTERY-POWERED AND LIGHTWEIGHT WITH LOW RADIATION SCATTER ... ALL UNIQUE FEATURES MAKING THIS A TRUE GAMECHANGER AS AN IMPORTANT DIAGNOSTIC TOOL FOR THE ATHLETIC TRAINING ROOM, CLUBHOUSE AND THE SIDELINE. WE’VE USED THIS DEVICE FOR OUR TEAMS FOR THE PAST TWO YEARS, AND IT HAS REPLACED THE FORMAL FLUOROSCOPY UNITS AND COULD EVENTUALLY REPLACE X-RAY UNITS IN SOME OF OUR ATHLETIC FACILITIES. **I WOULD NOT WANT TO LIVE WITHOUT IT AT THIS POINT.”**

—Neal ElAttrache, M.D., member of Cedar-Sinai Kerlan-Jobe Institute BOD and head team physician of L.A. Dodgers/L.A. Rams



“WHEN CATASTROPHE STRIKES, WE HAVE BEEN ABLE TO MAKE DEFINITIVE SURGICAL TREATMENT PLANS BEFORE WE EVEN GET ON THE PLANE TO GO HOME, THUS PREPARING OUR SUBSPECIALTY SURGEONS TO, IN A TIMELIER FASHION, BE READY TO START THE REPAIR AND RECOVERY. IN HIGH DEMAND, HIGHLY COMPETITIVE ENVIRONMENTS, GETTING YOUR PLAYER READY DAYS SOONER CAN BE SIGNIFICANT.”

—Kirt Kimball, M.D., Brigham Young University football team orthopedic surgeon