Hybrid OR
with an installed
„Zero Gravity“
radiation protection system

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No disclosures
Zero-Gravity

Radiation protection system

Company Biotronik

Figure 5. Schematic shows face shield situated in the path of scatter radiation approaching the eyes and head while allowing an unhindered line of site between eyes and monitors.
Optimizing Radiation Safety in the Cardiac Catheterization Laboratory: A Practical Approach

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Zero-Gravity
The Suspended Radiation Protection System

Technical Data Monorail Hinged Swing Arm

A) Boom arm length 300 cm
B) Working boom arm length for the user 165 cm
C) Boom arm rotation (for both arms) 360°
Ceiling height requirement min. 272 cm
Monorail weight 227 kg

Radiation absorption

Leaded head shield
0.5 mm Pb equivalency

Leaded shoulder/ body shield
1.00 mm Pb equivalency
Zero gravity in combination with ceiling mounted DSA
Important:
Careful planning

Recommended:
Visits to centers, discussion with colleagues
Version 3
Comparison of a Suspended Radiation Protection System versus Standard Lead Apron for Radiation Exposure of a Simulated Interventionalist

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**Figure 1.** The tested Zgrav system (a) includes a lead apron, left arm shield, and lead-acrylic face shield. (b) The more recent Zgrav model (CFI Medical, Fenton, Michigan) was designed to...
Clinical Evaluation of Protective Garments with Respect to Garment Characteristics and Manufacturer Label Information

Andrew Lichliter, MD, Victor Weir, PhD, DABR, Robert Evans Heithaus, MD, Sean Gipson, MD, Almas Syed, MD, James West, MD, and Chet Rees, MD

Figure 2. (a) Closed-back (top) and open-back (bottom) aprons. (b) Wooden frame. Dosimeter is placed where indicated by arrow. (c) Closed apron on frame with dosimeter in phantom torso in clinically realistic setup. Dosimeter is inside the vest where indicated by arrow. Arrowhead indicates acrylic patient phantom. (d) Overhead view schematic of test setup. All distances are in centimeters.
**Operator exposure vs labeled protection**

Figure 3. Operator exposure versus labeled protection. Higher values indicate poorer protection. *Garment assumes overlap to meet labeled equivalence even though this is not indicated on the label.

**Exposure$^{-1}$ vs weight**

Figure 5. Exposure$^{-1}$ versus weight: exposure$^{-1}$ (a measure of protection, with high values being better) correlates with apron weight. *Garment assumes overlap to meet labeled equivalence even though this is not indicated on the label.
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