WHITE PAPER

WALL PADS AND GYM SAFETY

GYM EQUIPMENT - APRIL 2016

Properly specified and placed wall pads are an essential part of gymnasium safety.

Draper high-quality gym wall pads will provide heavy-duty protection.

One of the most overlooked ingredients for a safe and complete athletic facility is the simple wall pad. It may only be a few inches of foam rubber on a wood backing, but when it comes to promoting safety, this is the most important product in the gymnasium.

WHY WALL PADS?

In November 2002, a 14-year-old female player crashed into an unpadded wall at the Sarcoxie, Missouri, First Baptist Church. The wall of the metal building, which had been leased from the church by Sarcoxie High School, was less than four feet from the court end line. The student suffered a traumatic brain injury.

In another 1997 incident, an eighth grader sustained a fatal injury running into the wall during open gym. In this case, the Trotwood-Madison, Ohio, middle school wall was padded. But the padding was insufficient.

There are other cases of participants being severely injured or even losing their lives during games, practices, or other activities. Many of these incidents have resulted in lengthy litigation and/or significant settlements that impacted all involved in the use and design of the recreation space. Wrestling, volleyball, and even PE classes are potentially dangerous activities. Owners, contractors, architects, and specifiers need to protect athletes, and, as a by-product, provide themselves some protection and insulation from claims by including wall padding and sufficient buffer zones around game and practice courts.

Despite calls for stronger rule requirements, governing bodies like the National Federation of High Schools (NFHS), the Amateur Athletic Union (AAU), and the National Collegiate Athletic Association (NCAA) have not made any firm requirements for the need for wall pads. However, all indicate that due to the extreme physical nature of basketball, volleyball, and other sports, a fair amount of clearance is required around courts. For basketball, most sanctioning bodies use wording similar to that found in NFHS rule book that reads, “There shall be at least three feet (.9 meters) (and preferably 10 feet (three meters)) of unobstructed space outside boundaries,” which is intended to allow athletes to slow down before hitting obstructions.

Volleyball rules require greater buffer zones, but since the volleyball court normally sits inside the basketball court, basketball competition usually presents the greatest potential for contact with obstructions.

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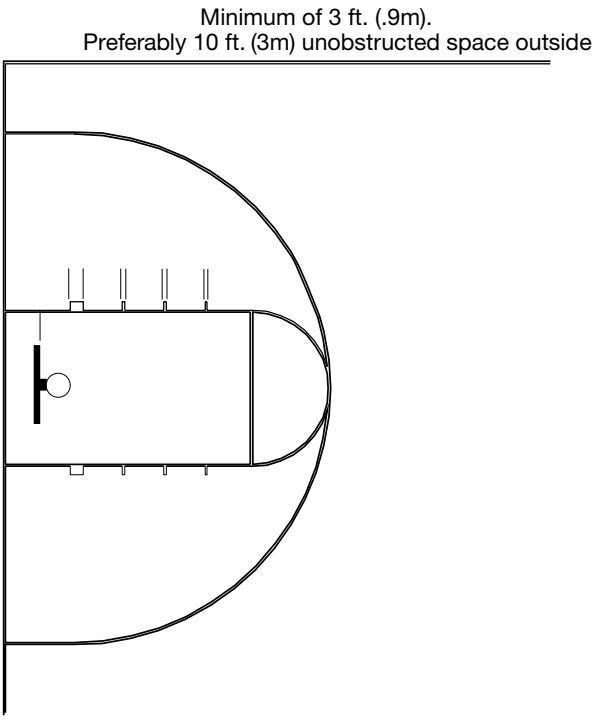

Even with a minimum of three feet (.9m) (and ideally 10 feet (3m)) between basketball courts and walls, appropriate wall padding should still be part of a gym design.

Be sure that all walls—especially columns and other irregular shapes—are wrapped in padding.

With the speed, size, and athleticism of today's competitors, three feet/.9 meters definitely is not enough space for an athlete to stop, slow down, or brace for an impact with a rigid surface. At a minimum, all hard surfaces that are within 10 feet/three meters of the playing surface, as well as any outside corners, should be padded. And make sure you don't forget the practice or cross courts because injuries can and do happen in preparation, just like in competition. Wall pads should be mounted on these surfaces in accordance with ASTM standard F-2440-11, which indicates a pad should be mounted no more than four inches above the playing surface.

To maximize the safety of athletes, collegiate, and professional facilities are padding all hard surfaces regardless of how close they are to the court.

All athletes deserve the same level of protection, not just collegiate and pro players. In fact, younger players might reasonably be expected to have less control and be more likely to fall or fail to stop in time.

MAKING THE RIGHT CHOICE

There are several recognized gymnasium equipment manufacturers who supply many different types of wall pads. There are also a large number of upholsterers, awning shops, and related types of business that can make wall pads, and even more individuals who can build wall pads in their garage. With so many suppliers and different options for wall pads, following are some guidelines and points of consideration for making the right choice.

Manufacturers—Stay away from products supplied by upholsterers, awning or canvas shops, garage shops, or other sources that do not regularly make wall pads a significant portion of their business. While wall pads are not a high-tech product that requires significant equipment or special skills to manufacture, there is some expertise required to ensure athletes are protected. The recognized manufacturers that specialize in wall pads should know the best materials and how to assemble those materials to provide the necessary protection for activity participants. These manufacturers have built their business and reputation on wall pads, are properly insured, and take the product seriously.

Foam Types—There are many very good foam options, but the ability of foam to absorb shock from an impact is what makes a good wall pad. For some reason, wall pad specifications normally only include foam density requirements. Foam density is not the best measure to use in wall pad specifications because it has little bearing on the ability of the foam to absorb shock. Foam density is really an indicator of foam durability with higher density foams

Cutouts can be designed to allow access to power and controls

An example of improper padding—there is too much unpadded wall.

being more resilient. Indentation Force Deflection (IFD) is the appropriate measure for wall pad foam quality. IFD is a measure of the force required to compress a four-inch thick piece of foam to a pre-determined percentage of its original thickness. A higher IFD rating equals more shock absorption. Specifiers should not accept any wall pads made with foam that has an IFD of 25% less than 75-80 pounds (34-36 kg).

ASTM Standard—A wall pad that does not meet the current ASTM standard (F2440-11, Standard Specification for Indoor Wall/Feature Padding) for wall pads should never be accepted. ASTM F2440-11 includes minimum acceptable measures for shock absorption using two measures (Gmax and HIC), and specifies details about how pads are installed. Gmax measures impact attenuation. Gmax is the ratio of maximum negative acceleration on impact in units of gravity to the acceleration due to gravity. Head Injury Criterion (HIC) measures the likelihood of head injury arising from an impact. This standard requires a Gmax of 200, plus a HIC below 1000, stating "Padding should be used on wall and other facility features … that an athlete might contact during play." It also specifies that pads should be installed no more than four inches (10 cm) from the floor.

For both Gmax and HIC, the most important thing to remember is that the lower the measures are, the better and the safer. Specifiers or owners should require padding suppliers to provide test results showing that their products meet ASTM F2440-11.

VOC Emissions—Vinyl, foam, backing board, and glue used to make wall padding will emit Volatile Organic Compounds or VOCs. Excessive or certain VOCs can trigger asthma attacks or allergic reactions for some gym users. Children are most effected by breathing VOCs. Specifiers should specify only wall pads that can prove they contribute to safer and healthier indoor environments for school children and athletes. Wall pads that meet the requirements of UL GREENGUARD® and UL GREENGUARD Gold® are tested to insure that VOC emissions are at safe levels. Draper wall pads are certified UL GREENGUARD Gold®, which is the more rigorous certification and was formerly known as GREENGUARD® for Children and Schools.

The entire wall pad unit should be tested—not just the vinyl—since the glue, backing, and padding may also emit VOCs.

Fire Retardant—Using specialized foams, many manufacturers are able to offer wall padding that provides an NFPA Class-A rating when tested in accordance

Everything is a potential hazard, and should be padded. Even corners— including all outside corners—and columns should be padded.

Wall pads, while providing protection with low VOCs, can also serve as a design element with custom printing available.

with ASTM E-84, Standard Method for Surface Burning Characteristics of Building Materials. Class A rated pads meet requirements for maximum flame spread and smoke development and are made with foams that generally will not sustain a flame. Some manufacturers' Class A pads also meet IBC 803.2.1 requirements when tested in accordance with NFPA 286, Methods for Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room, Fire Growth. Some jurisdictions only accept this type of pad, so owners and specifiers should check with the local code enforcement body. Class A Rated Wall Pads are definitely required in New York, Rhode Island, Connecticut, and Tennessee. If in doubt, fire retardant wall pads are never a bad idea.

Wall Pads must be tested as a complete unit—and not just contain Class A vinyl and/or Class A foam—because just combining these materials may not meet the standard.

Class-A pads are probably not necessary if mounted to concrete masonry unit walls (concrete blocks, pre-fabricated concrete (tip) walls, poured in place concrete walls, etc.).

As you can tell from the above brief guidelines, there are many things to consider when including wall pads in a project.

For more information on Draper Class A rated Wall Pads, visit our wall pads web page: *draperinc.com/gymequipment/products.aspx?grp=37*.

Draper also offers an online or face-to-face class on safety throughout the gymnasium. For details, check Draper's education web page: *draperinc.com/aiacontinuinged/aiacontinuinged_classes.aspx*.

For assistance with choosing or specifying wall pads, please feel free to contact Draper or your local Draper gymnasium equipment dealer for assistance.

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