

CLEAN AIR SYSTEM AT Orangetheory® FITNESS

THE NEED FOR A SAFER SPACE

Orangetheory Fitness franchisee Shawn Johnson prides himself on offering members at his Denver, Colorado-area locations the means and motivation to foster self-improvement and community. But when the COVID-19 pandemic necessitated business closures and stay-at-home orders, he was left with empty studios and frozen member accounts.

Johnson looked for a way to jumpstart his business while still following state and local guidelines for a safe reopening, but to give customers the peace of mind to resume their fitness activities, he needed to mitigate their risk of infection.

FINDING AN EFFECTIVE APPROACH

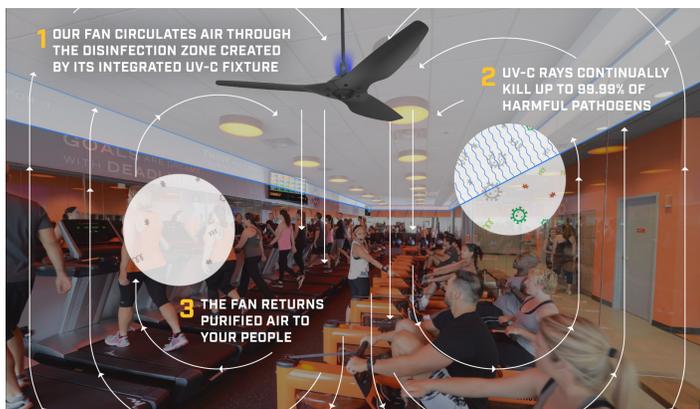
During the pandemic, health and safety professionals familiar with the [CDC's Hierarchy of Controls](#) against occupational hazards have applied the model to preventing the transmission of infectious disease. The CDC's inverted pyramid shows that eliminating or removing the hazard is the most effective control, while wearing personal protective equipment (PPE), though important, is considered a last line of defense.

Taking these concepts under consideration, Johnson concluded that building upon Orangetheory's social distancing requirement and face mask policy could further promote safety and help his studios resume normal operations. For Johnson, the solution was clear: take the fight directly to the virus and eliminate it.

The challenge was choosing the right technology for the job. An effective air disinfection system would inactivate pathogens throughout the space and protect members from inhaling or touching the active virus. Ultraviolet (UV-C) light has been used for disinfection purposes for decades, but such systems are rarely optimized to serve more than a localized area within a space. Typical wall-mounted and portable UV-C units direct rays at standing or sitting heights, making them unsafe for occupied spaces. Moreover, these units lack an adequate means of circulation, so most of the air in the space never reaches the disinfection zone, and purified air isn't delivered outside a small radius.

Fortunately, a call from Big Ass Fans addressed all of these obstacles.

Figure 1: Clean Air System's UV-C Technology



NO SECRETS, JUST SCIENCE

Big Ass Fans' Clean Air System improves upon other disinfection systems by incorporating UV-C technology into industry-leading ceiling fan designs. By integrating the **UV-C fixture** atop the fan's hub and directing its disinfecting light upward, Big Ass Fans makes this technology safe for use in occupied spaces. Driven by the fans' powerful airflow, Clean Air System circulates the full volume of air in the space, pulling air from the occupant level up into the disinfection zone where it can be purified and delivered to customers.

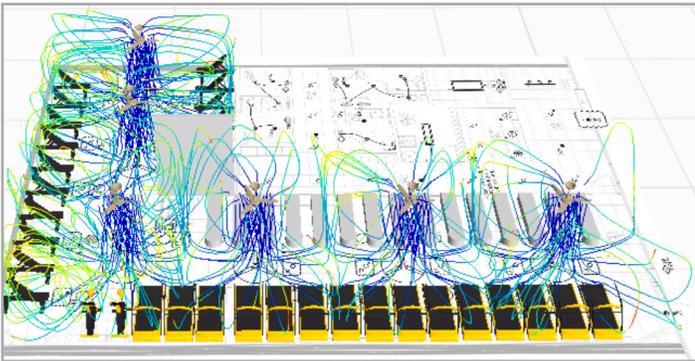


Figure 2: UV-C fixture

Clean Air System's disinfection has been [proven in independent lab testing](#) to kill SARS-CoV-2, influenza A and B, tuberculosis, and other harmful pathogens at rates greater than 99.99%.

After receiving detailed layouts of the Orangetheory facilities, Big Ass Fans applications engineers provided a data-backed airflow analysis and infection risk assessment. Using proprietary 3D SpecLab® software, the engineers modeled Clean Air System's performance and specified Haiku UV-C fans in optimal locations throughout Johnson's exercise studios. With class-leading airflow and suitability for ceilings as low as 9 feet (2.7 meters), the stylish Haiku UV-C fans offered an effective and unobtrusive solution for the spaces.

Figure 3: SpecLab Analysis of Orangetheory Fitness Arvada



	Baseline (Existing HVAC Only)	Haiku with UV-C (6 fans)
Total ACH (ACH + eACH)	3.5	34.3
Infection Risk (Member - 1hr)	21%	2% (-90% Reduction)
Infection Risk (Coach - 3hrs)	50%	6% (-88% Reduction)



“We sent Big Ass Fans our drawings and they did an analysis breaking down exactly what we should install and what the decrease in Wells-Riley infection risk we would expect to see.”

- Applewood - from 2.9 to 21.1 ACH with **88% reduction in risk** of infection
- Arvada - from 3.5 to 34.3 ACH with **90% reduction in risk** of infection
- Parker - from 2.7 to 32.1 ACH with **91% reduction in risk** of infection
- Pine Bluffs - from 5.5 to 46.9 ACH with **89% reduction in risk** of infection

PUTTING BUSINESS BACK ON TRACK

The payoff for installing Clean Air System began immediately. “It made a sales impact on Day One,” Johnson said. “After we emailed our members to let them know we had installed Clean Air System, several people took their accounts off freeze and scheduled classes the same day.”

Johnson's efforts to protect his customers and provide safer public spaces didn't go unrecognized: the county government approved a \$20,000 grant for his Parker and Pine Bluffs studios through the federal Coronavirus Aid, Relief, and Economic Security (CARES) Act.

Implementing Clean Air System in the occupant breathing zone allowed Johnson to safely leverage the benefits of UV-C technology without creating harmful byproducts such as ozone. In addition to the improvement in occupant safety and comfort, Haiku's ENERGY STAR-rated efficiency

helped Johnson cut energy costs by reducing his facilities' reliance on A/C to cool occupants. The fan's handheld remote, mobile app controls, and voice integration with Amazon Alexa and Google Assistant also enable Orangetheory staff to conveniently manage Clean Air System's operation throughout the day. Additional app settings offer safety and convenience: Clean Mode deactivates the UV-C fixture when the fan is turned off, while the UV-C lifetime tracker monitors the UV-C light's runtime and will notify Johnson when it's due for replacement in about two years, depending on usage.

