

INTRODUCTION

What Is Resistance Training?

Consisting of movements that cause muscles to contract against an external resistance, resistance training is a category of exercise designed to promote muscular performance. The benefits of resistance training include increases in muscular force, power, speed, size, and endurance. Changes to these qualities are all dependent on the type of resistance utilized.



What Is Keiser's Pneumatic Technology?

Pneumatics simply deals with the mechanical properties of compressed gases or air. In the case of the Keiser Resistance Training Platform, compressed air is used to create a pure form of resistance. We refer to the resistance created by compressed air as "pure" because Newton's Laws of Motion do not govern the resistance, as is the case with a mass-based resistance. In simplistic terms, "pure" simply refers to the fact that 10 pounds of resistance created by pneumatics is always 10 pounds, regardless of the velocity of movement. In contrast, 10 pounds of mass-based resistance varies depending on the velocity of movement as acceleration and deceleration of the weight have different effects on actual resistance. Pneumatics can be described as a low mass - low inertia form of resistance, and its impact on power and speed is far greater than mass.



The Status Quo

Traditionally, most resistance training protocols have used mass (including barbells, dumbbells, and weight stack machines) as the primary method to create resistance. Mass can be an efficient form of resistance when primarily used to train for improvements in maximum force production (strength) and muscular size (hypertrophy). This is a result of the movement velocity being relatively slow. It is no coincidence that resistance training is often called "strength training", as speed and power cannot be trained as efficiently. It is the inertia involved with mass-based resistance training that is the enemy of speed. Utilizing mass for speed or power improvements is simply an inefficient medium, and we have the science to prove it.

