



Using Activity and Job Task Preparation to Drive Ergonomic Risk Reduction

Vincent Cotto
Ergonomic Specialist
Assembly & Flight Operations



About Me

- Stratford, CT
- B.S. Exercise Science – Sacred Heart University
 - Gold Medal of Excellence
- M.S. Exercise Science, Human Performance – Southern Connecticut State University (Dec. 2016)
 - Biomechanics Research
- Areas of Interest: Applied Biomechanics, Physiology, Injury Prevention, Injury Epidemiology



Sacred Heart
UNIVERSITY



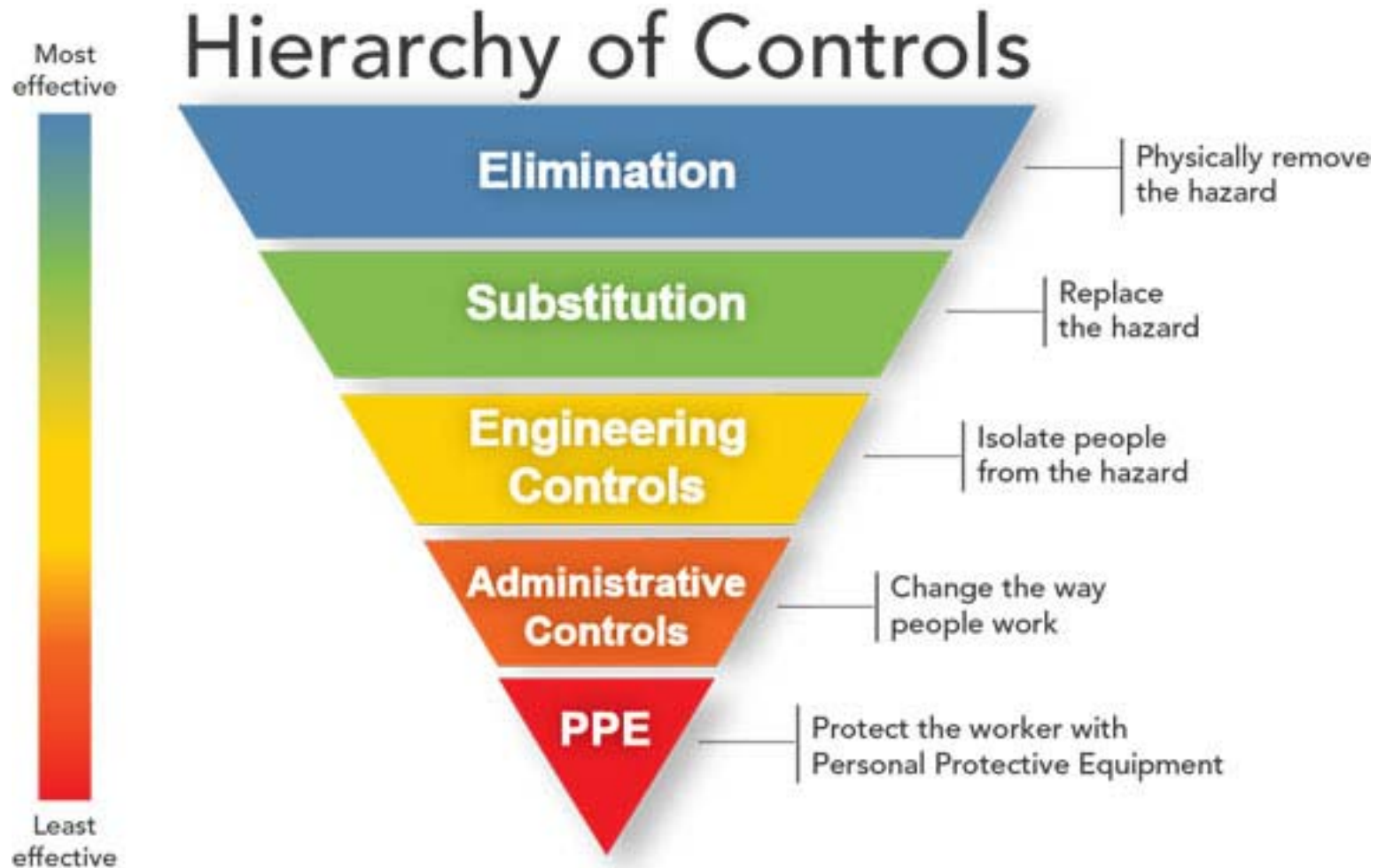
Sikorsky, a Lockheed Martin Company



- **Design and manufacture military and commercial helicopters**
- **All 5 branches of United States Armed Forces**
 - Military services and commercial operators in 40 nations
- **1929 – Stratford, CT**
- **"We pioneer flight solutions that bring people home everywhere...every time TM."**
- **2 million lives saved since first helicopter rescue in 1944**



How Do We Protect Our Workers?



What is the Missing Piece?



Process vs. Individual Improvement



- **First we look at how we can improve the process but when that does not work there may be opportunity to improve the individuals exposed to the process hazards**
- **How can we improve the capabilities of the employees exposed to the risks our work presents?**
 - **Job Rotation?**
 - **Pulling employees off certain jobs?**
 - **What about “job task preparation”?**

How Do Others Who Are Exposed to Injury Prepare?



Needs Analysis



- **Analysis of Job Tasks**
- **Analysis of Injury Metrics**
- **Analysis of Employees**
- **Feasibility of Programs**
 - **Time?**
 - **Location?**
 - **Sustainability?**

Targeted Personal Exercise Program



- **Product Center Specific**
- **Train the Trainer**
- **Voluntary Participation**
- **What does “Targeted” mean?**





SPOTLIGHT ON SAFETY

TOPIC: Targeted Stretching & Strengthening



The Targeted Stretching & Strengthening Program is a newly packaged and more job specific version of Progressive P.E.P. This program will be designed to your department's job specific tasks and will not be a generalized program that all Sikorsky employees will receive; it is **specific** to the demands of **YOUR** jobs & departmental needs! While there is some similarity to the existing P.E.P. program, this program will better prepare you for the muscular demands your job entails.

Benefits Include:

- Reduction in sprain and strain injuries
- Increase in strength, flexibility, balance and cardiovascular function
- Decrease in stress
- Improvement in blood circulation
- Reduction in fatigue

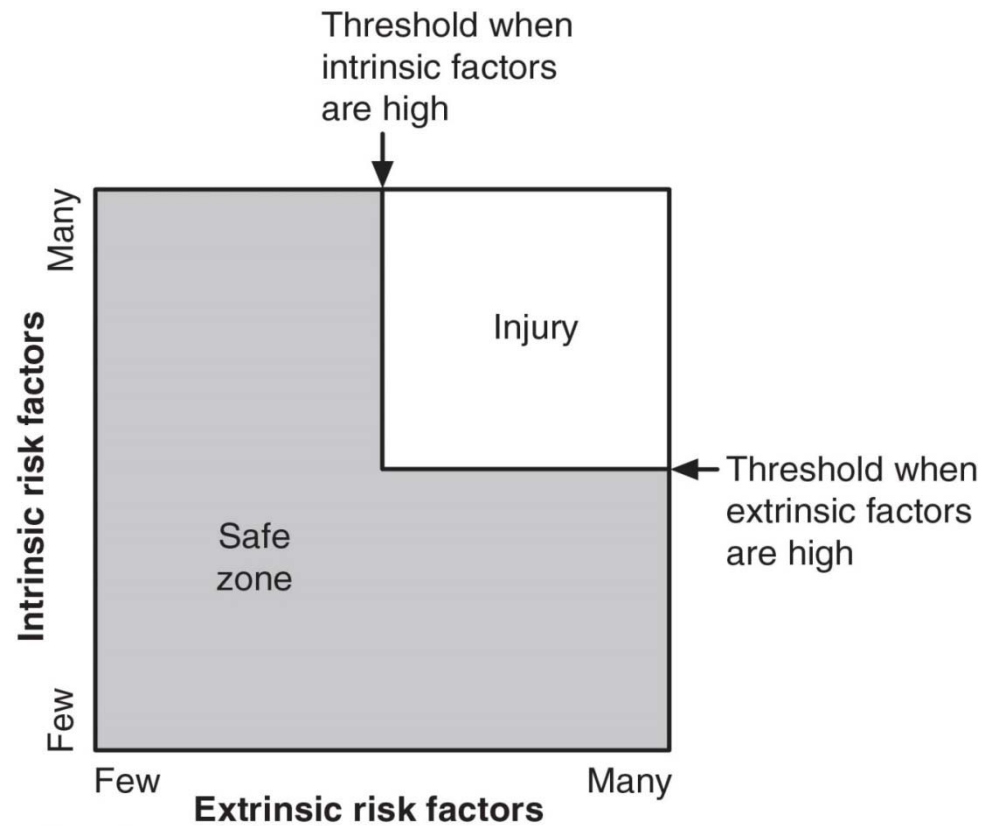
Assembly & Flight Operations Breakdown

Each specific part of CAFO will receive their own specific program:

1. Final Assembly
2. Hangar
3. Paint Shop

CAUTION: If you have an injury or any type of reoccurring discomforts, you should immediately report your injury/symptoms and obtain a medical evaluation.

Why This Program Is Needed



Adapted Messier et al. 1991.



Why Targeted?

Specificity Principle

- **Training or preparation needs to match the requirements of the activity**
- **To improve ability in a particular task, engage in activities that are functionally and biomechanically similar to the tasks in question**
 - **Overhead work and shoulder/neck exercise**
 - **Leaning forward into small areas and lower back exercise**

Wolff's Law

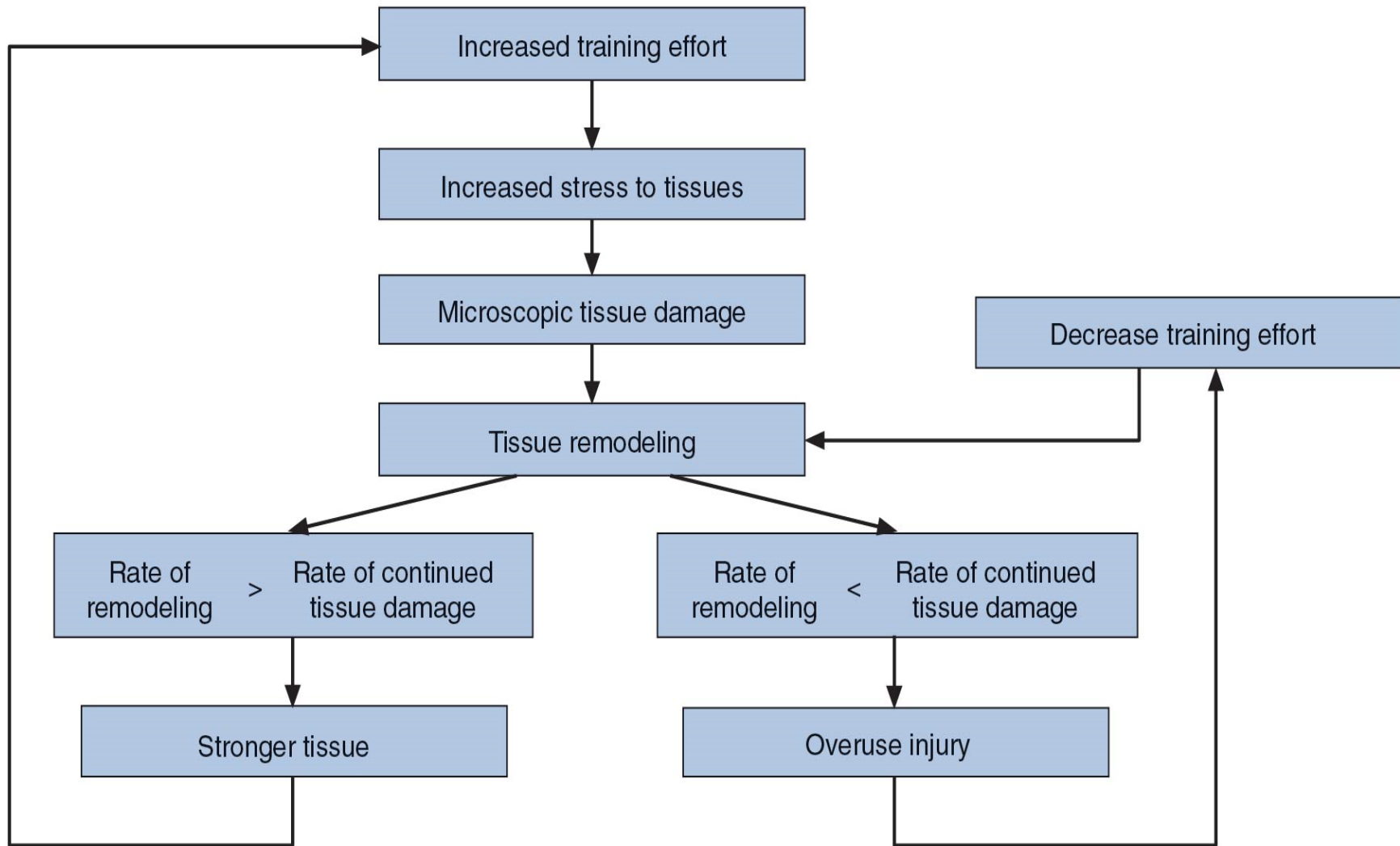


- **Connective Tissues (muscle, bone, ligaments, tendons) respond to the stressors (or lack of) put on them**
 - **Loading = Osteoblast activity and Muscle Remodeling**
 - **No Loading = Osteoclast activity and Muscle Degradation**

Overuse/Ergonomic Injuries

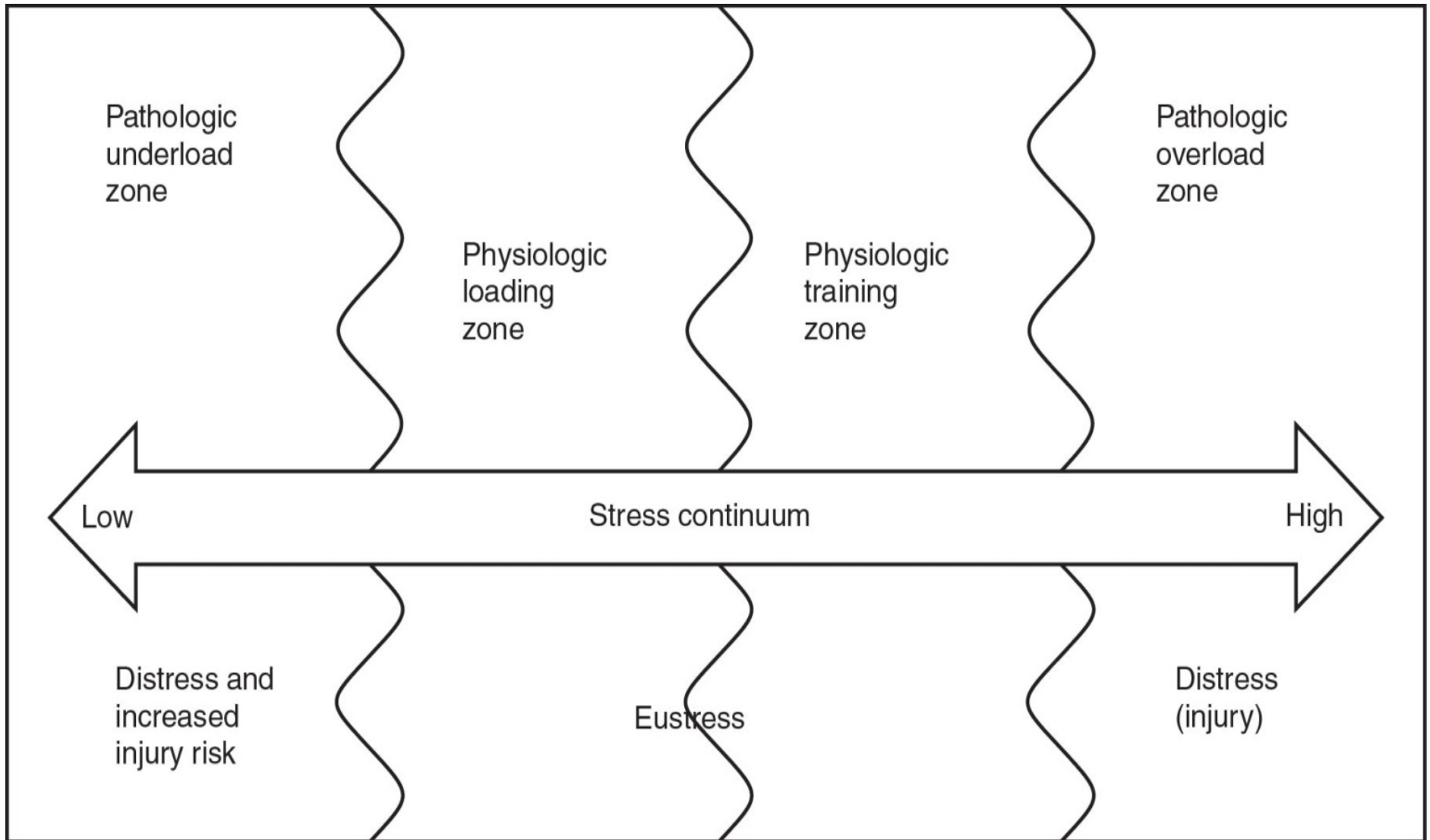


Model for Overuse Injuries



Reprinted by permission from Williams 1993.

Stress Continuum



Outcomes & Sustainability



- **Reduction of Ergonomic Injuries**
 - 50% Reduction in Assembly & Flight Operations
- **Improved Strength**
- **Improved Flexibility**
 - *“Feeling more prepared and capable of doing my job”*
- **Improved Morale**
 - *“We feel the company is concerned with our safety”*
- **Employees see the decrease in injuries amongst peers**
- **Rewards for active participation**
 - *“Let us help you help yourselves”*

How Do These Outcomes Help Us?



PRODUCTIVITY

Thank You

