

### Getting Started with Strength Training

"Knowing is not enough, we must apply. Willing is not enough, we must do."  
-Goethe

### Example Exercise Routines

Find more videos at:  
[www.enduranceworks.net/resources](http://www.enduranceworks.net/resources)

### Seasonal Plan

- Pre-Season
- Competition
- Off-season

Takeaway: Strength training is appropriate year round

### Why Strength Train?

"It's not the will to win, but the will to prepare to win that makes the difference."  
- William "Bear" Bryant



### Special Considerations

"Life is like a ten speed bicycle. Most of us have gears we never use."  
- Charles M. Schulz

### Injuries Are Common in Triathlon

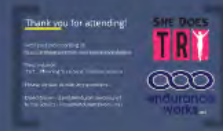
"Fifty percent of triathletes sustained an injury in the 8-month pre-season. Thirty-seven percent were injured during the 10-week competition season."  
-Burns, et al.

### How Muscles Function

"The body conforms and adapts to the intensities and directions it is habitually subjected to."  
- Wolfe's Law

# Build & Maintain: Strength Training for Triathletes and Runners

by David B. Glover, MSE, MS, CSCS & Krista Schultz, MEd, CSCS



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Krista Schultz



David Glover



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## Agenda

- How muscles function and get stronger
- Common injuries and their causes
- Proper exercise technique
- Sample exercises and routines
- Special considerations

## Strength Training Myths

- Lifting weights will give me big, bulky muscles.
- If I strength train, it will slow me down.
- Strength training won't help my performance.
- I don't have time to strength train.

## Strength Training Facts

- Improves muscle function, strength and power
- Increases lean muscle mass
- Decreases body fat
- Decreases risk of injury
- Boosts anabolic hormones
- Slows aging process



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# How Muscles Function



"The body conforms and adapts to the intensities and directions it is habitually subjected to."

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**Muscles Enable Movement**

- Muscles attach to bones, which attach to bones
- Neural impulses contract muscles to move bones to create body movement
- Muscles produce motion by pulling on bones to create motion

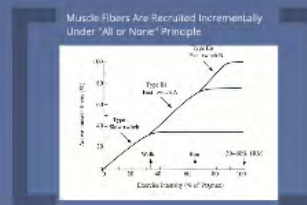
A small diagram showing a red muscle fiber attached to a bone. The muscle is shown in a contracted state, pulling on the bone. Labels include 'Muscle' and 'Bone'.

**Muscles Are Made Up of 3 Types of Fibers**

- Type I
- Type IIa
- Type IIb

Slow Twitch

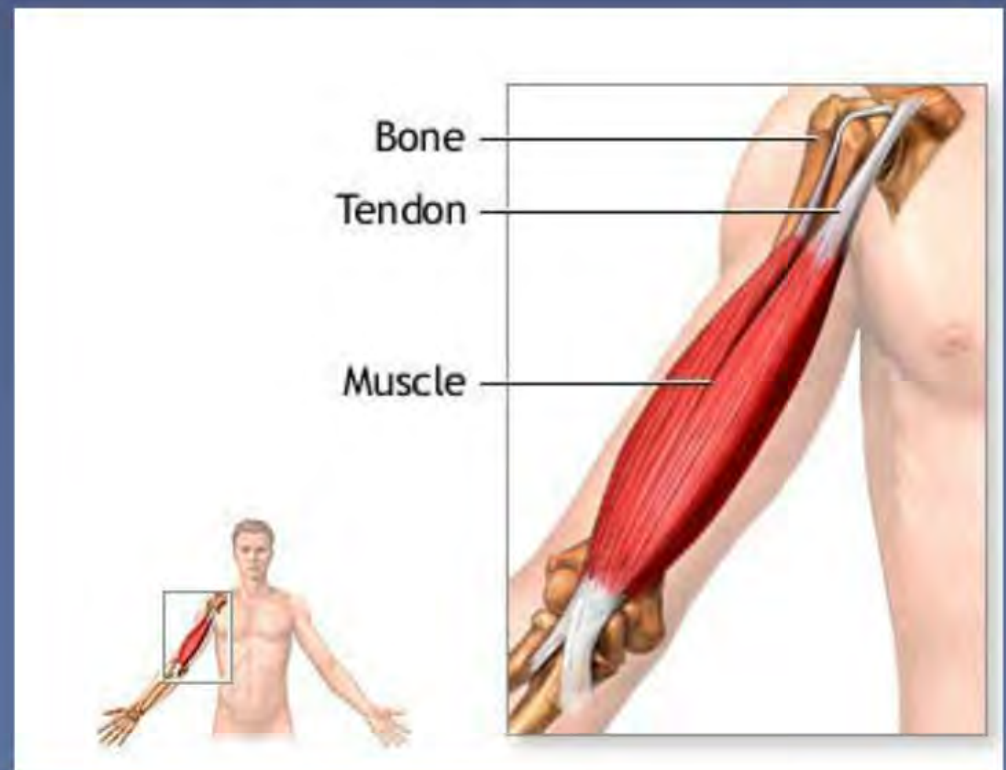
Fast Twitch





# Muscles Enable Movement

- Muscles attach to tendons, which attach to bones
- Nerve impulses contract muscles to move bones to move body
- Musculoskeletal system tries to adapt to exercise stress



# Muscles Are Made Up of 3 Types of Fibers

**Type I**

Slow Twitch

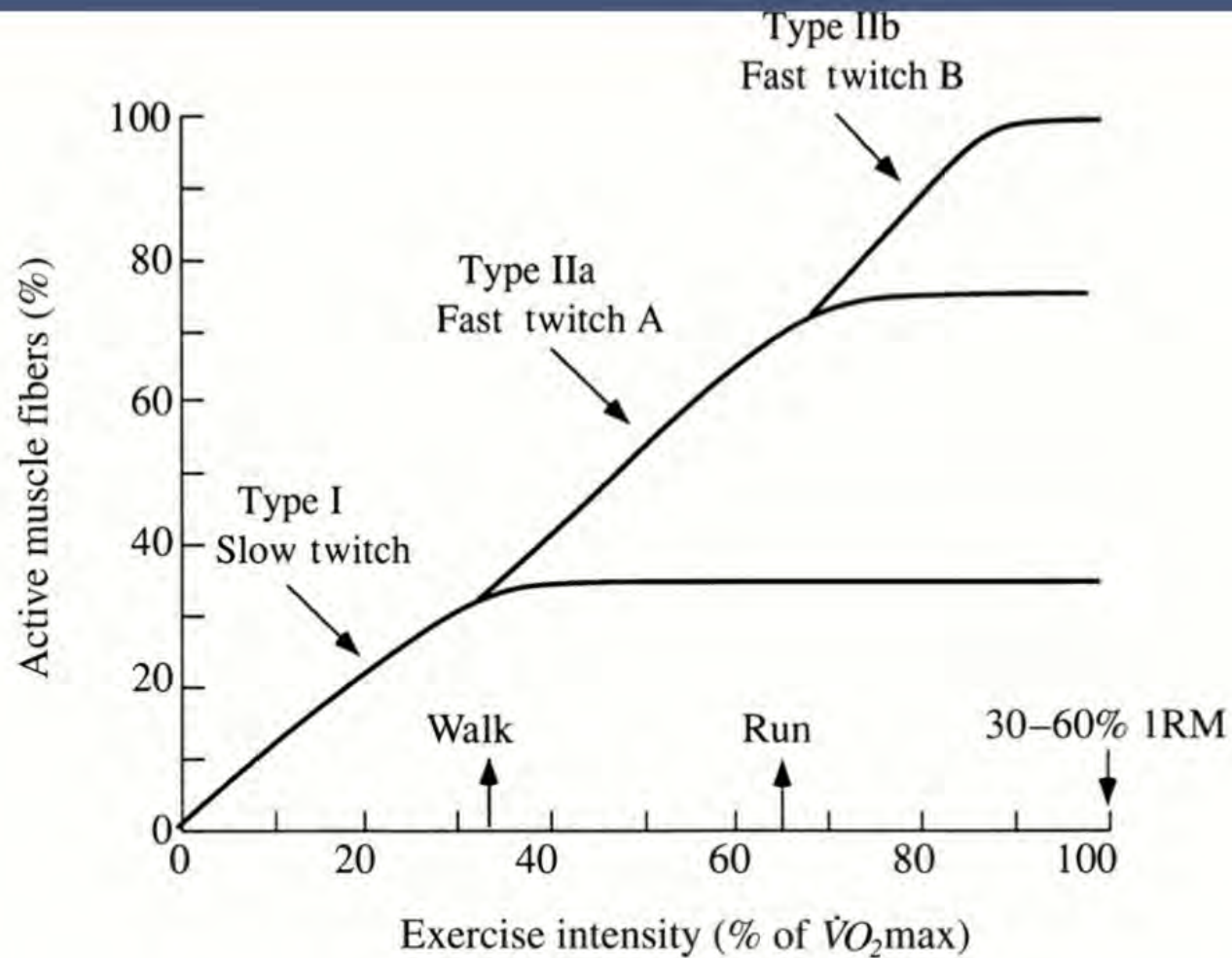
**Type IIa**

**Type IIb**



Fast Twitch

# Muscle Fibers Are Recruited Incrementally Under "All or None" Principle



# Injuries Are Common in Triathlon

*"Fifty percent of triathletes sustained an injury in the 6-month preseason... Thirty-seven percent were injured during the 10-week competition season."*

- Burns, et al.

## Common Overuse Injuries



- Achilles tendinitis / calf injury
- IT band syndrome
- Plantar fasciitis
- Shoulder tendinitis
- SI joint dysfunction
- Stress fractures

## Common Problems for Triathletes & Runners

- Muscle weaknesses and imbalances
- Muscle asymmetry - dominant sides
- Loss of proprioception
- Loss of range of motion
- Poor joint and core stability
- Poor balance
- Overuse injuries

An overuse injury is any type of muscle or joint injury, such as tendinitis or a stress fracture, that's caused by repetitive trauma. — Mayo Clinic

## Typical Triathlon Training & Lifestyles Can Lead to Problems

### Typical Training

- Long, slow training
- Highly repetitive motions in single plane of motion
- No strength training

### Typical Lifestyle

- Poor posture
- Forward rotation of shoulders at computer, phone, etc.
- Sitting for long periods of time

## Other Common Causes of Injuries

- Too much training volume
- Sudden changes in training volume
- Lack of strength in a particular muscle and/or muscular imbalances
- Poor body mechanics
- Inadequate warm up and cool down
- Inadequate rest

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### Three Cues for Proper Stability

- Bracing abdomen (core)
- Knee toward pinky toe
- Weight over tripod of foot

### Consider the Three Planes of Motion

Example Movements:

- Sagittal: Single Leg Push, Dumbbell Fly, Torso Swing
- Frontal: Jumping Jacks, Side Bending, Lateral Lunge
- Transverse: Running, Biking, Squats

### Guidelines for Strength Training

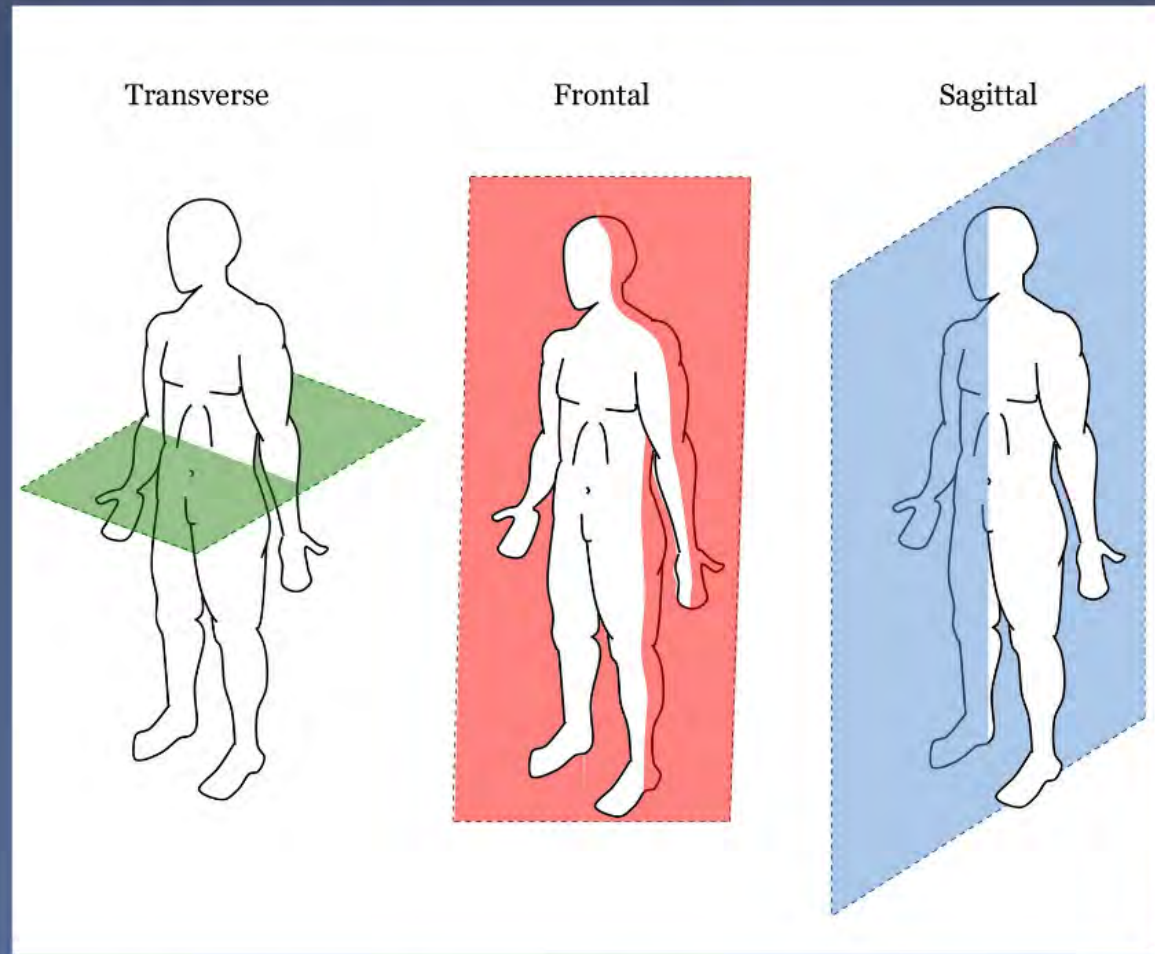
Perform exercises that:

- Incorporate stability, balance, strength and power
- Load spine
- Enhance major muscle movers
- Engage stabilizers in front and back - 28 muscles
- Maintain a balance of strength across the joints.

Perform exercises with controlled, fast movement (not ballistic) in proper form:

- 8 to 20 repetitions (depending on exercise) to muscular fatigue
- 2-3 sets per exercise

# Consider the Three Planes of Motion



## **Example Movements:**

Throw a Frisbee,  
Dumbbell Fly,  
Tennis Swing

Jumping Jacks,  
Side Bending,  
Lateral Lunge

Running,  
Biking,  
Squats

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## Example Full Body Strength Routine

- Push press
- Overhead squat -> split squat -> single leg squat
- Push up -> plank push ups
- Good morning -> single leg good morning
- Dumbbell row
- Double external rotation
- Calf raises
- Crab walks with band

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# Warm Up with Dynamic Stretches



Alternate Toe Touch  
Progression

YouTube

# Quick Core Workout: 4 Point Stability



**1. Front Plank**



**2. Side Plank (Left, Right)**



**3. Back Bridge**



# 1. Front Plank





## 2. Side Plank (Left, Right)



### 3. Back Bridge

## 4 Simple Exercises to Improve Cycling Efficiency



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# Seasonal Plan

**Pre-Season**

**Competition**

**Off-season**

*Takeaway: Strength training  
is appropriate year round*

# Special Considerations



*"Life is like a ten speed bicycle. Most of us have gears we never use."*

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Strength Training Counters the Effects of Aging...

AS WE AGE	↓	↑	↑
Strength	↓	↑	↑
Endurance	↓	↑	↑
Flexibility	↓	↑	↑
Balance	↓	↑	↑
Cardiovascular	↓	↑	↑
Bone Density	↓	↑	↑
Metabolism	↓	↑	↑
Immune System	↓	↑	↑
Autophagy	↓	↑	↑

What Happens As We Age?

↓	↑
Cardiovascular	↓
Muscle mass	↓
Power	↓
Balance	↓
Flexibility	↓
Reaction time	↓
Cardiovascular	↓
Bone mass	↓
Metabolism	↓
Immune system	↓
Autophagy	↓

Women Are Different Than Men

- Structural – Q-angle (hip joint wider than knees)
- Muscles fire at different response times
- Tend to have lower bone density
- Tend to have weaker upper body
- Tend to have more body fat
- Hormonal differences

# What Happens As We Age?

Characteristic	Aging
Muscular strength	↓
Power	↓
Muscular endurance	↓
Muscle mass	↓
Muscle fiber size	↓
Muscular metabolic capacity	↓
Resting metabolic rate	↓
Body fat	↑
Bone mineral density	↓
Physical function	↓
Anabolic hormones	↓

# Strength Training Counters the Effects of Aging....

Characteristic	Aging	Strength Training
Muscular strength	↓	↑
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Muscle mass	↓	↑
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Thank you for attending!

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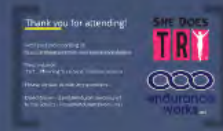
Next webinar:  
12/1: Planning Your Next Triathlon Season

Please contact us with any questions:

David Glover - david@enduranceworks.net  
Krista Schultz - krista@enduranceworks.net

**SHE DOES**





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