Off-Season Conditioning

Strength Training and Nutrition Strategies to Build a Solid Base

TCSD December BYOC

www.RehabUnited.com

Overview

- Physiological Effects Of Strength Training
- Basic Principles Of Strength Training
- Designing A Program
- Fitting The Program Into Your Training
- Calculating Energy Needs
- Nutrition Periodization
- Eating While On The Go

Why Supplement With Strength Training?

- Neurological Response
  - Improve Coordination
  - Improve #of Muscle Fibers Recruited
- Injury Prevention
  - Increases Bone Density
  - Maintains Joint Flexibility
  - Develop Control Through Available Range Of Motion
- Increase Your "Hotness" Factor
  - Slows Loss of Lean Muscle Mass
  - Increases Hypertrophy

The Principles

- Identify your Limiting Factors
- Develop Short & Long-Term Goals
- Take Objective Measurements to Show Progress
- Create Sport-Specific Exercises
  - Principles → Strategies → Techniques
- Provide Adequate Stress in a Safe Manner
- Obey the Periodization Gods
- Do Not Abandon the Core

Endurance Vs. Strength

Muscular Strength

- Maximal force a muscle or muscle group can generate
  - (often expressed as one-rep max or 1-RM)

Muscular Endurance

- Ability to make repeated contractions against a submaximal load

Recovery & Prehab

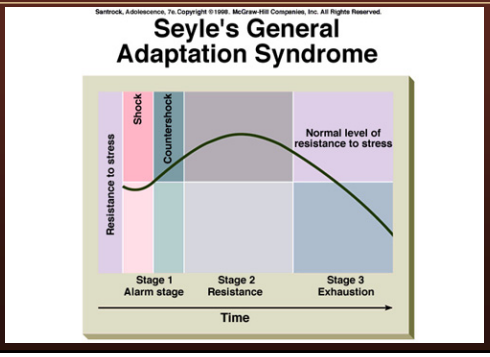
We spend much more time recovering than we do training . . .

. . . so why do we emphasize our TRAINING more than RECOVERY?

Overreaching vs Overtraining

Overreaching	Overtraining
Short Term (days)	Long Term (weeks, months)
Reversible with Recovery	Irreversible with Recovery (short term)
Positive Training Adaptation	Negative Training Adaptation

General Adaptation Syndrome

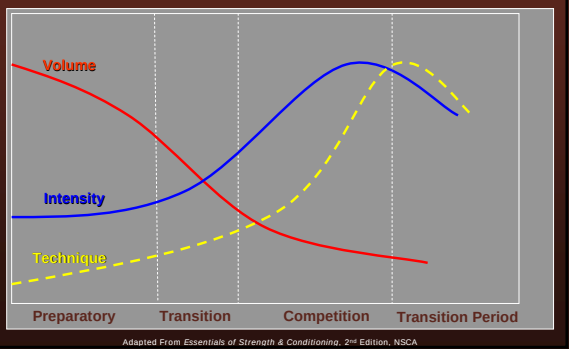


General Adaptation Syndrome

- Phase One – ***Alarm Phase***
  - First 2-3 wks of training
  - Neural Adaptation
- Phase Two – ***Super-Compensation Phase***
  - Biochemical, physiological, structural, mechanical adaptations
- Phase Three – ***Maladaptation Phase***
  - Overtraining = Staleness = Exhaustion

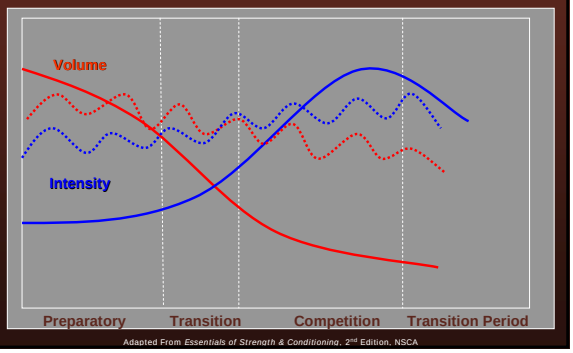
*Manipulation of GAS theory promotes a progressive system of **periodization** that can be developed to prevent overtraining and optimize performance*

Linear Periodization (Matveyev)



Adapted From *Essentials of Strength & Conditioning*, 2nd Edition, NSCA

Non-Linear (Undulating) Periodization



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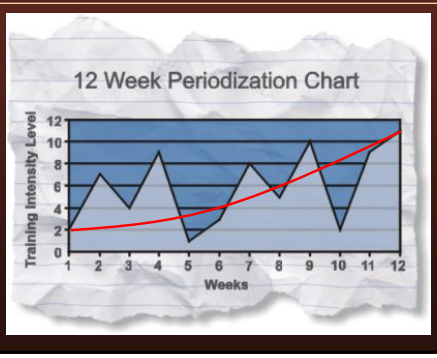
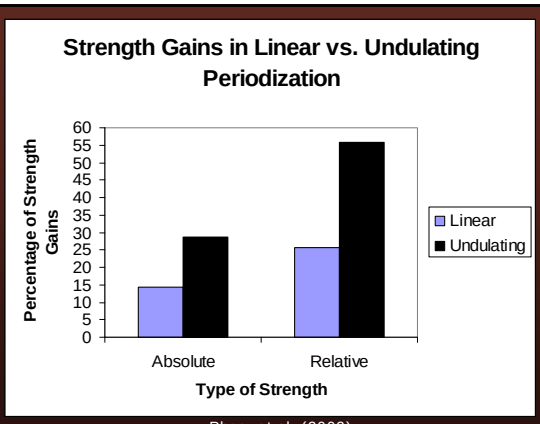


Quick Summary of "Sciency" Stuff

- Periodization Can Decrease Injury Risk
  - Manipulation of Training Variables
  - Planned Cycles of Active Rest
- Non-Linear (Undulating) Periodization:
  - Frequent Changes in Variables
  - Increases in Strength with Equal Volume



Rhea, et al. (2002)

Program Design

Joe Friel's 4 phases

- Anatomical Adaptation (AA)
  - "Filling The Tank" while developing proper technique
    - High Reps with light weights (ie. 20-30 reps body weight with little recovery)
- Maximum Transition (MT)
  - Prepare for upcoming strength with lower reps and increased weight (ie. 10-15 reps with body weight +)
- Maximum Strength (MS)
  - Improve force generation (ie. 5-8 reps with heavy weights and long recovery)
- Strength Maintenance (SM)
  - Maintain strength but focus more on sport activities (ie. 8-12 reps with moderate weight and recovery)

Fitting It All In…

- Coordinate the Program w/Sport Demands
  - Lift on low impact days (bike/swim) after training session if possible
- Body should be able to tolerate one strength workout/week during all phases of training outside of race (taper) weeks
  - Aim for 2-3/week during prep/base periods
- Plan Recovery Workout Every 3-4 Weeks
  - Reduce weight, # of sets, or # of sessions

The Off-Season Plan

1. **Filling the Tank**
   - Increase Fitness Base
   - 3-Plane Functional Mobility
   - Core Strength, Balance, Coordination
2. **Power UP**
   - Improve Strength & Power
   - Run/Ride Longer & Stronger
   - Train Harder
3. **Transition to Season**
   - Muscular Endurance
   - Sport-Specific Speed & Strength
   - In-Season Maintenance

Designing A Workout

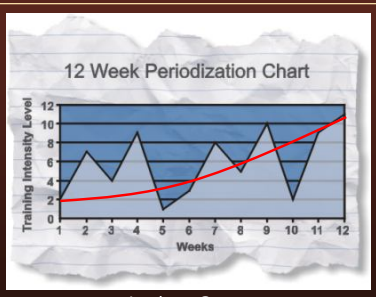
- Work flexibility as an active recovery between heavier lifts
- Warm up & cool down with dynamic mobility exercises
- Muscle Groups:
  - Legs - calves, quads, glutes, hamstrings, IT Band
  - Arms - biceps, triceps, lats, rotator cuff
  - Core - obliques, multifidi, abdominals
- Make program as specific to your needs as possible

Example Athletes

Nutrition - Barriers

- Time
- Education
- Money
- Behavior
- Increased Needs

Nutrition Periodization



Intake = Output

Different Training Phase = Different Nutrition Plan

Determining Nutrient Needs

Macronutrient Requirements

CHO	50-70%
	2.5-4.5 g/lb
PRO	12-18%
	0.5-0.8 g/lb
FAT	20-30%

Activity Factor

Sedentary	1.2
Lightly Active	1.3
Moderate	1.5
Heavy	1.75
Extreme	2.0

TDEE = REE x PA

Determining Nutrient Needs

Tammie Tri

- 5'4", 125 lbs.
- REE = (125 x 10) = 1250 Calories
- Heavy Activity (AF = 1.8)
- TEE = 1250 x 1.8
- **TEE = 2250 Calories/day**

Determining Nutrient Needs

Method 1

- CHO = 3.0 g/lb = 125 (Wt) x 3.0 = **375 g**
- PRO = .75 g/lb = 125 (Wt) x .75 = **94 g**

Sally: 375g/95g

Increasing Lean Mass

- Caloric & Nutrient Density
  - **Calorie**: High in Calories for Volume
  - **Nutrient**: High in Vitamins/Minerals for Volume
- Weight Loss: **Nutrient Dense**
- Weight Gain: **Nutrient + Calorie Dense**
  - Nutrient Timing
    - Isn't Everything . . . It's the Only Thing
  - Protein-Sparing Effect of Carbohydrate
    - Use Carbs for Energy
    - "Spare" Protein for Tissue Building

Nutrient or Calorie Dense?

FAsT Food?

- Mon: Carl's Jr.
- Wed: In 'N Out
- Fri: Taco Shop

Carl's "Not-So" Jr.

Six Dollar Guacamole Bacon Burger:
1140 Calories, 85g Fat

With Chili Cheese Fries & Strawberry Malt:
2920 Calories, 177g Fat

Nutrition Facts
Serving Size 1 order (412g)

Amount Per Serving	
Calories 1060	Calories from Fat 650
	% Daily Value*
Total Fat 72g	111%
Saturated Fat 30g	150%
Trans Fat	
Cholesterol 150mg	50%
Sodium 1860mg	78%
Total Carbohydrate 60g	20%
Dietary Fiber 3g	12%
Sugars 18g	
Protein 40g	
Vitamin A 15% • Vitamin C 20%	
Calcium 30% • Iron 30%	

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

NutritionData.com

Carl's Jr.

Charbroiled BBQ Chicken Sand
Charbroiled Chicken Salad
Medium Fries
Iced Tea

1080 Calories
33.5g Fat
75g Protein
123g Carbohydrate

In 'N Out

Option 1
- Double-Double
  - Regular
- Fries
- 32oz Lemonade

1430 Calories
59g Fat
1440mg Sodium

Option 2
- Double-Meat
  - Ketchup & Mustard Instead
- Fries
- Iced Tea w/lemon

810 Calories
34g Fat
850mg Sodium

Cheese = 90 Calories, 8g Fat, 350mg Sodium

In 'N Out

Shake it up?
685 Calories
33g Fat

Tasty Smoothie
671 Calories
10g Fat

Taco Shop – Take Uno

Carne Asada Burrito
Corona

1429 Calories
63 g/Fat

Taco Shop – Take Dos

6 Chicken "Street" Tacos
Corona

750 Calories
21 g/Fat

One Week Later . . .

Before	**After**
kcal: 6464	Kcal: 3311
Fat: 332	Fat: 99g

3150 kcal (1 pound)
230 g Fat (2100 kcal)

Thank You!

Questions?
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