

New Trends in Training for Runners

University of Minnesota Head Strength and Conditioning Coach

Cal Dietz, M.Ed. dietz011@umn.edu

21 Big Ten/WHCA Titles

10 National Championships

Over 300 All-Americans

www.xlathlete.com

**Down load interactive
PowerPoint With video's and
hyperlinks on “Download” page
at www.xlathlete.com**

XLATHLETE

Change The Thinking Process

- **What is Weightlifting / Training / Conditioning to the Bio-Organism?**

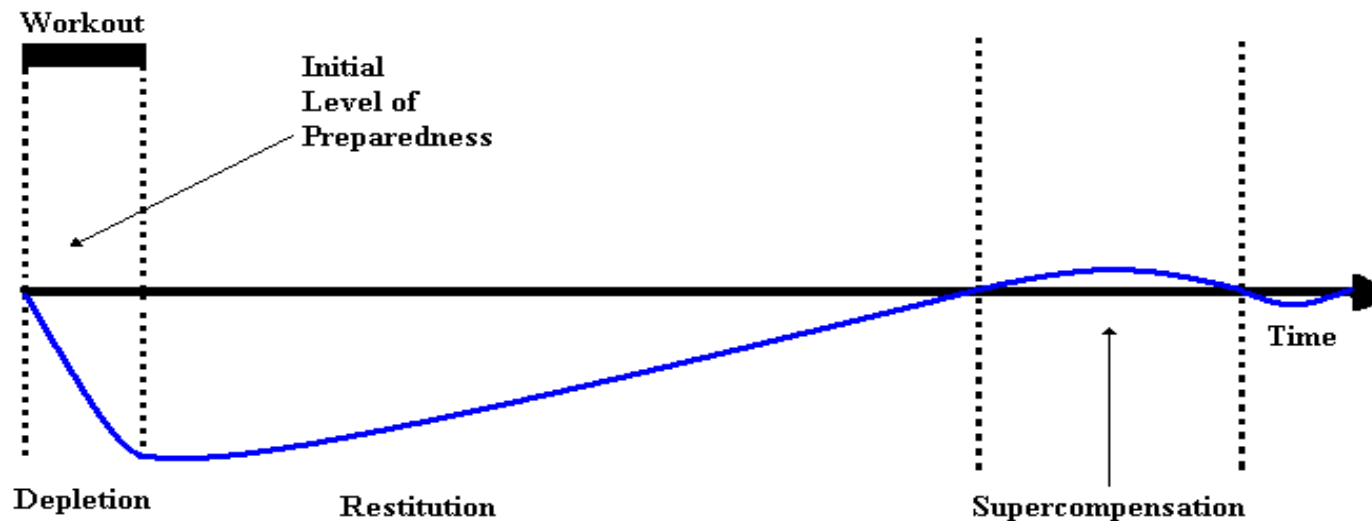
- **Let's Revisit the Foundation**

Stress

- Stress – Many types of stress – “Mechanical Stress”
- The Stress of Life - Hans Selye – First book the Soviet Sports Empire was build on.
- Soviet scientists were inspired by the groundbreaking work of Dr. Hans Selye, a Canadian professor and leading pioneer in stress research.

SAID Principle

Science and Practice of Strength Training, Zatsiorsky (p.13)



Time course of the restoration process and athlete's preparedness (AP) after a workout according to the supercompensation theory. The vertical axis is both for the amount of substance and for the level of preparedness. According to the model, the two curves coincide.

SAID Principle

SAID Principle – Specific Adaptation to the Implied/Imposed Demand

Adaptation – If it doesn't exist you will die.

What is the purpose of this information and how to apply it

Key Factors For Successful Programming

- High Volume
- High Intensity
- High Frequency
- High Expectations
- Some Overtraining

Mistakes Made by Coaches

- **LACK A SYSTEM OF APPLICATION OF METHODS**
- **In America, NO/FEW system of programming and organization of training are taught.**
- **Mastery of a skill excellent, but non-existent with its development**
- **America - Natural selection at it's finest**

Great Coaches?

- **World Championship 1983**
- **Only 5 of 42 (12%) finalists in throwing events recorded their season best performance**
- **World Championships 1995**
- **Throwing, High Jump, High jump, Hurdle Run – best of groups 28 %**

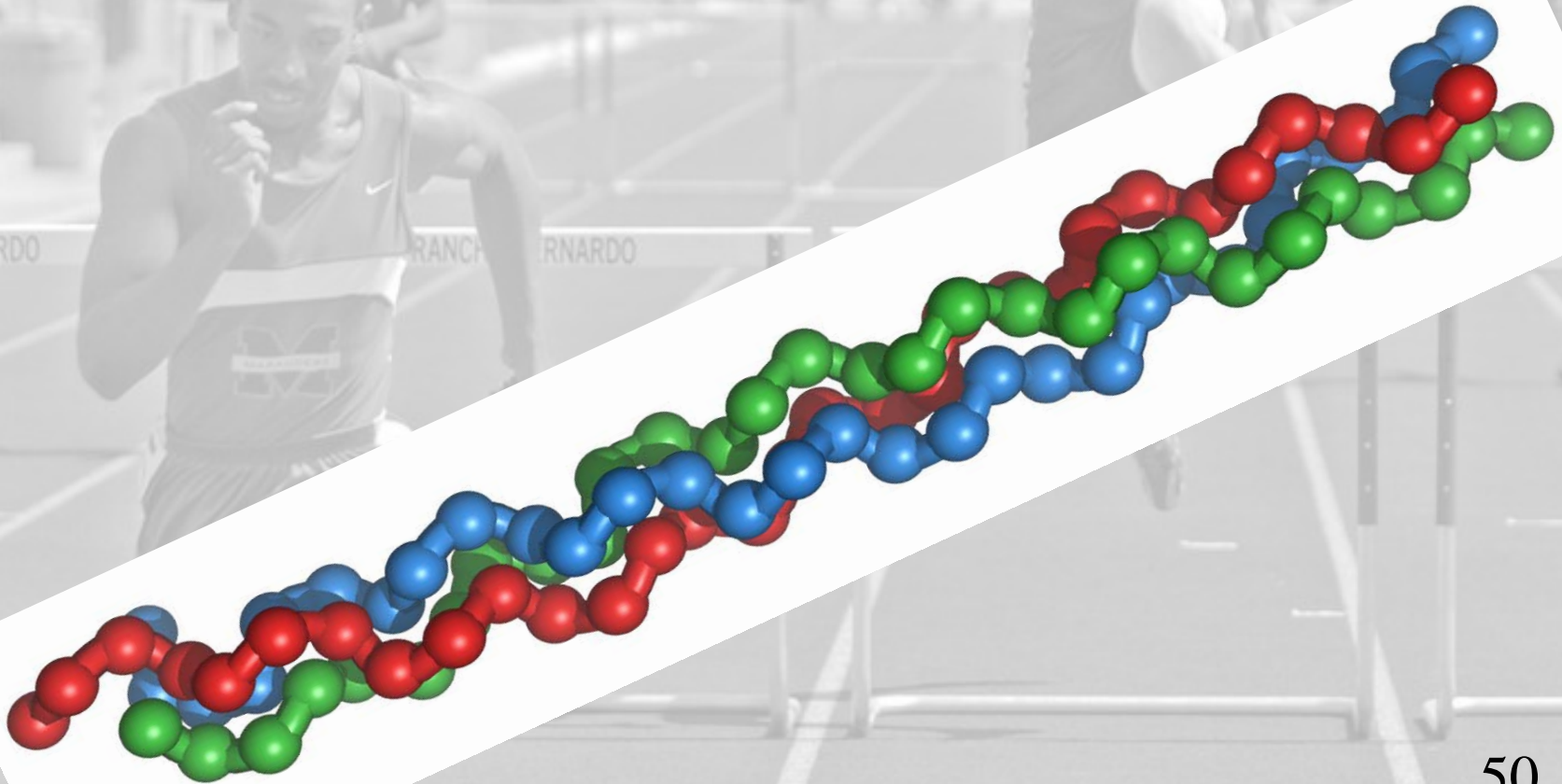
1 Way to Fix the Issue

- **Search for a Higher Adaptation “Potential” to the stress being placed on the human body.**
- **Do the great athletes contain higher Adaptation Potential? They handle greater loads of stress. What is the one factor?**
- **How is this applied?**

Ways to Increase Stress

- **Train multiple times during the day – Focus on one stress quality per workout.**
- **Aid in Recovery – With Biochemical, Bio mechanical, Psychological**
- **Proper nutrition is 60%to 80% of training**
- **Increase Stress Level Adaption**

Various Methods For Increasing GPP and Other Cross Training Methods



Other Methods For Increasing GPP and Other Cross Training

- **Adaptability Training**

Db Incline -

Lat Pull Down -

) 1 set

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

**Complete as
many sets as
possible in 7
Minutes.**

Various Methods For Increasing GPP and Other Cross Training Methods

- **Super Endurance Workout**
- **One Lift GPP Circuit**
- **Adaptability Circuits**
- **Tabata Intervals**
- **Chernoff Effect? – Training?**
- **Weight vest – Bosco**

When GPP/Cross Training?

- Daily Plan – When during day can methods be used
- Weekly Plan – Understand stressors and what they do to choose correct ones.
- Yearly Plan – Monthly Modeling

When GPP in Daily Training

- Morning Exercise – Morning bouts purpose Increase blood flow – Keep stress low.
- Training effect for conditioning – second or third workout of the day.
- Keep in mind the tendon matrix takes the form of the last stressor of that day. Depth jumps!

When GPP In Weekly Planning

- Later part of week would be used a least if legs are involved
- Remember the purpose of GPP– Increase adaptability to handle stress.

When GPP In Yearly Planning

- June – GPP
- July – GPP
- August – Specific
- September – November – Specific
- December – February – GPP
- March – May – Specific

Various methods

[Treadmill Conditioning Workouts For Track](#)

[Training For Injured Track Athletes](#)

[Top End Speed Development For Track](#)

[Flexibility and Stretching For Track](#)

[Core Workouts For Track](#)

[Specific Prehab For Track](#)

[Plate Workouts For Track](#)

[Dynamic Warm Up For Track](#)

[Bike Conditioning Workouts For Track](#)

[Conditioning Plans For Track](#)

[Non-Spinal Loading Circuits For Track](#)

[Medicine Ball Circuits For Track](#)

[Stadium Step Workouts For Track](#)

[Post Workout Recovery For Track](#)

[Adaptability Training For Track](#)

[Plyometric Programs For Track](#)

[Super Endurance Workouts For Track](#)

[Increased Muscle Mass Workouts For Track](#)

[Tabata Intervals For Track](#)

Recovery Methods

- **Post workout recovery is often overlooked when designing programs**
- **It is important to jump start the healing processes of the body**
- **There are three basic types of recovery**
 - 1. Mechanical (exercises and cool down barefeet) Vibration, EMS**
 - 2. Biochemical (nutrition)**
 - 3. Psychological**

Mechanical Recovery Methods

- **Vibration with Inversion**
- **Low FRQ 16 to 24 – Relaxes Muscles**
- **High FRQ – Stimulated**
- **Spine, Glutes and Hamstring**
- **Relax Mouth**



Mechanical Recovery Methods

- [Sauna Recovery Workout](#)
- [Restorative Shower](#)
- [Post Workout Track Recovery](#)
- [Various Exercise Methods](#)
- [Band Stretching](#)
- [Soft Tissue](#)
- [Partner Stretching](#)
- [Flush Bike Workout](#)

Electrical Muscle Stimulation

- **Certain forms of EMS can relax the muscle**
- **EMS can address weakness and injuries**
 - **Glutes and VMO's can be addressed**
- **Russian Stim can hit little and hard to get to muscles that are inhibited or injured.**

Biochemical / Nutrition

- **Restorative Bath – 30 minute soak in tub, with 1 cup Epsom Salt and 1 Pint Hydrogen Peroxide**
- **Cold Tubs Still Work**
- **General Multi Vitamin, Plenty of Protein, Fish Oils, Probiotic, Digestive Enzymes, Zinc at Night.**

Chocolate Milk For Recovery?

- **Why Refuel?**

- 1. The nutrients found in 16 Oz of flavored milk can't be matched in other workout products.**
- 2. Many of my athletes prefers chocolate milk over supplements.**
- 3. The Ratio of Carb's and Protein is Ideal for recovery after strenuous activity**

Chocolate Milk For Recovery?

- 1. The key is to drink within a 30 minute window post strenuous activity.**
- 2. Improves body composition and recovery research has shown.**
- 3. Chocolate Milk is 90% Water.**

Chocolate Milk For Recovery?

- 1. Has key nutrients and electrolytes such as Calcium, Vitamin D. Phosphorus and Magnesium.**
- 2. Potassium to help muscle contract and regulate body fluids.**
- 3. B-Vitamins to help convert food energy to exercising Muscles.**

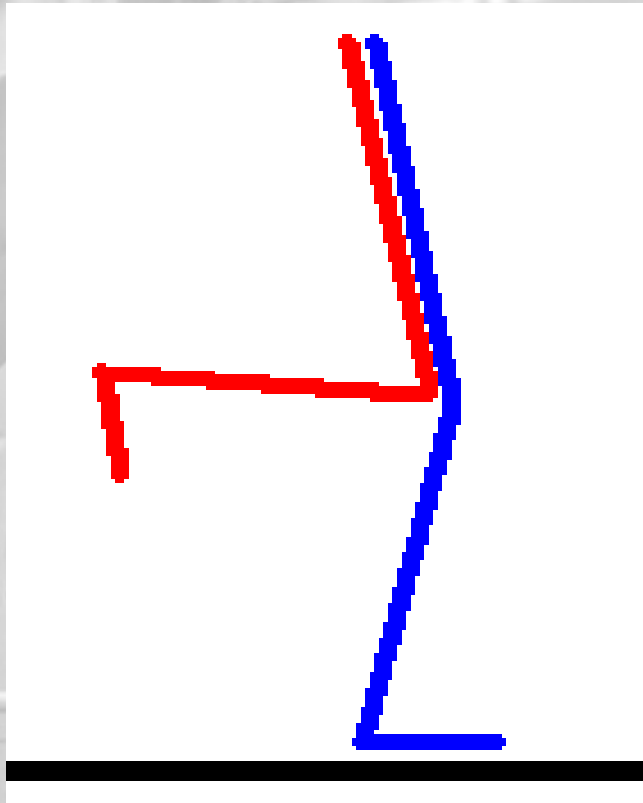
Chocolate Milk For Recovery?

- 1. Recovery is most important factor in training.**
- 2. Get boosters involved in buying process.**
- 3. Administration feels very comfortable about milk.**
- 4. The cost is as effective as the product.**

Chocolate Milk For Recovery?

- 1. The key is to drink within a 30 minute window post strenuous activity.**
- 2. Improves body composition and recovery research has shown.**
- 3. Chocolate Milk is 90% Water.**

Top End Speed Strength Training



[Straight Leg Deadlift](#)

[Straight Leg Walking](#)

[Good Morning](#)

[In Line RDL](#)

[Glute Ham Hyper](#)

[Incline](#)

[Glute Lift](#)

Top End Speed Strength Jump Training

Single Dumbbell Leg
Bench Hop

Good Morning Jump

Low Hurdle Hop For
Distance

Depth Drop – Jump

Pike Jump – Distance

Half Squat Jump -
Distance

Accelerated Band Jumps

- **Using Bands for Aiding the Speed Plyometrics**
- **Hook bands to the ceiling when performing Plyometrics**
- **Bilateral Vs Unilateral**

Key Exercises for Distance

- Hip Flex Band Pulls
- Calf Raises With Knee Bend
- Barefoot Stadium Training

Prehab Exercises For Distance Athletes

[3 Way Hamstring Touch](#)

[4 Way Ankle Kicks](#)

[90 90 Glute Isometric Hold](#)

[90 90 Groin Isometric Hold](#)

[Ankle Band Work](#)

[Anterior Tibialis Band](#)

[Back Extension With Twist](#)

[Ball Bent Knee Glute Lift](#)

[Ball Glute Lift](#)

[Glute Swings](#)

[Hip Flexor Isometric Pull](#)

[Piston Squat](#)

[Step Up Band Glute Kick](#)

[T Raise With Scap](#)

[Depression](#)

[TKE](#)

[Triangle Terror](#)

Rotational Core

- Why Rotational Core

Exercises Sequencing

- **Lunge Sequence**
- **Block 1 – Lunge in Place**
- **Block 2- Walking Lunge with Weight with pause and squeeze up on toes**
- **Block 3 – Walking Lunge Jumps with bands**

Dynamic Action Concept

- 3 Phase of Movements
- Block 1 - Focus on Eccentric Movement
- Block 2 - Focus on Stretched Isometric Phase
- Block 3 – Explosively
- Key Movements – Back Squat – Glute ham
Hyper- Bench Press
- Block with **DAC** should only be 2 to 3 Weeks
- General Blocks can be 2 to 6 weeks

Possible Joint Stiffness

- **Long Duration Isometrics Can be used to increase joint stiffness qualities.**
- **1 or 2 minutes per leg / 1 or 2 sets per Leg. 2-3 times a week**



Variations of Iso/Eccentrics

- **Perform with Short Duration isometrics in Strength Gain Desired Movements. Keep under 6 Seconds in duration.**
- **Long duration Isometrics would be performed for long term muscular adaption to stress and the ability to handle more stress. Overtraining effects nervous system the most, so Train the NS to handle more Stress. From 2 – 5 minutes**

Variations of Iso/Eccentrics

- Eccentrics slow is the base for starting the movement but must be transferred in to high speed eccentrics.

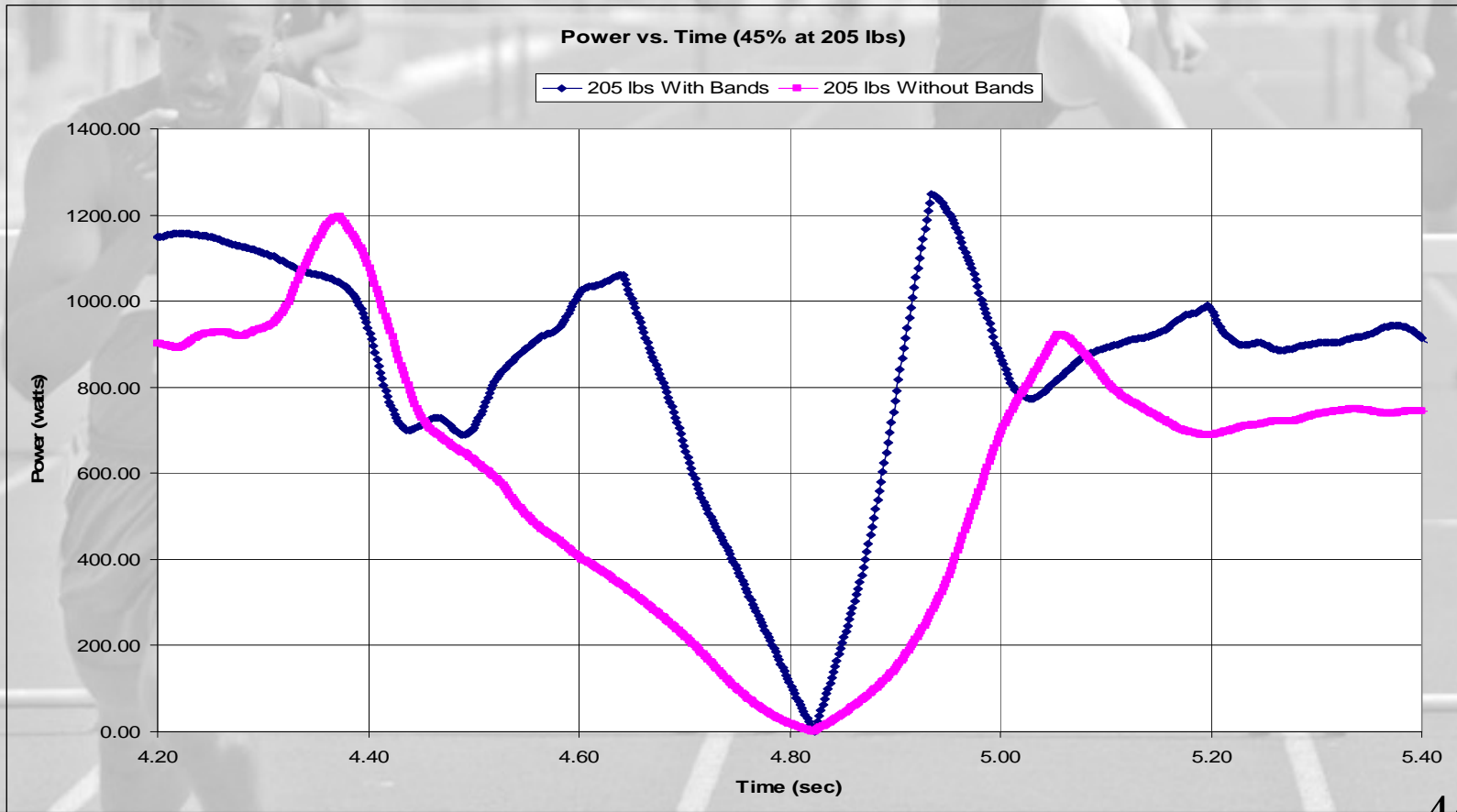
Plyometrics Vs. Metabolic Jump Training

- Plyometrics are for performance
- Metabolic Jump Training is a method for conditioning and not direct performance

Plyometrics

- **An excellent way to improve explosiveness and reactive strength**
- **Trains two qualities in the neuromuscular system**
 - **Makes the stretch-reflex more effective (creates a more powerful contraction) and inhibits the Golgi Tendon Organ reflex, which can limit explosive performance**
 - **Trains the elastic properties of muscles and tendons to properly prepare the athlete for explosive sport performance - [Hurdle Hops](#)**

Plyometrics



Plyometrics

- **Often overdosed in training**
 - **This is because plyometric exercise is not fatiguing in the traditional sense (such as distance running) but primarily in a neural sense**
 - **The muscles and nerves can easily become overtrained and performance can suffer**
- **It is best to do only a few jumps per plyometric session and only include plyometrics during the most appropriate time of year (near peaking for example)**

Common Coaching Mistakes in Plyometrics from Strength Coaches

- **The progression takes so long -**
- **Coaching athletes to absorb the force is a mistake**
- **The proper term used should be withstand the force.**

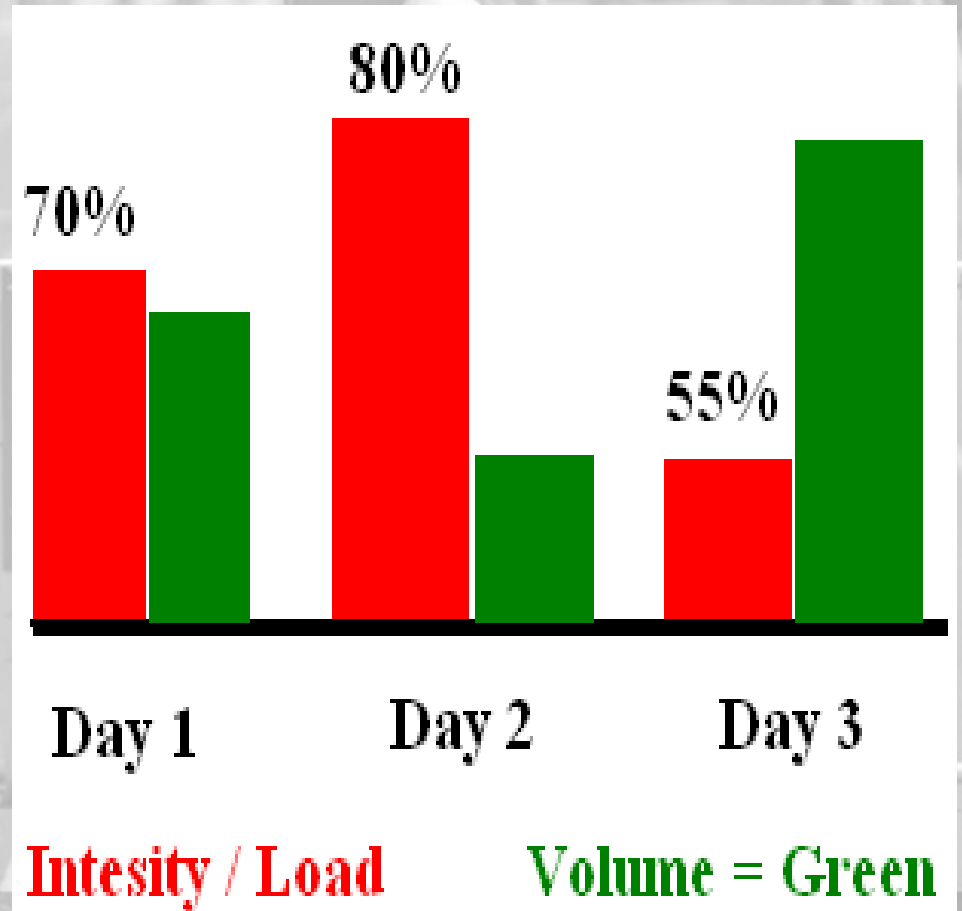
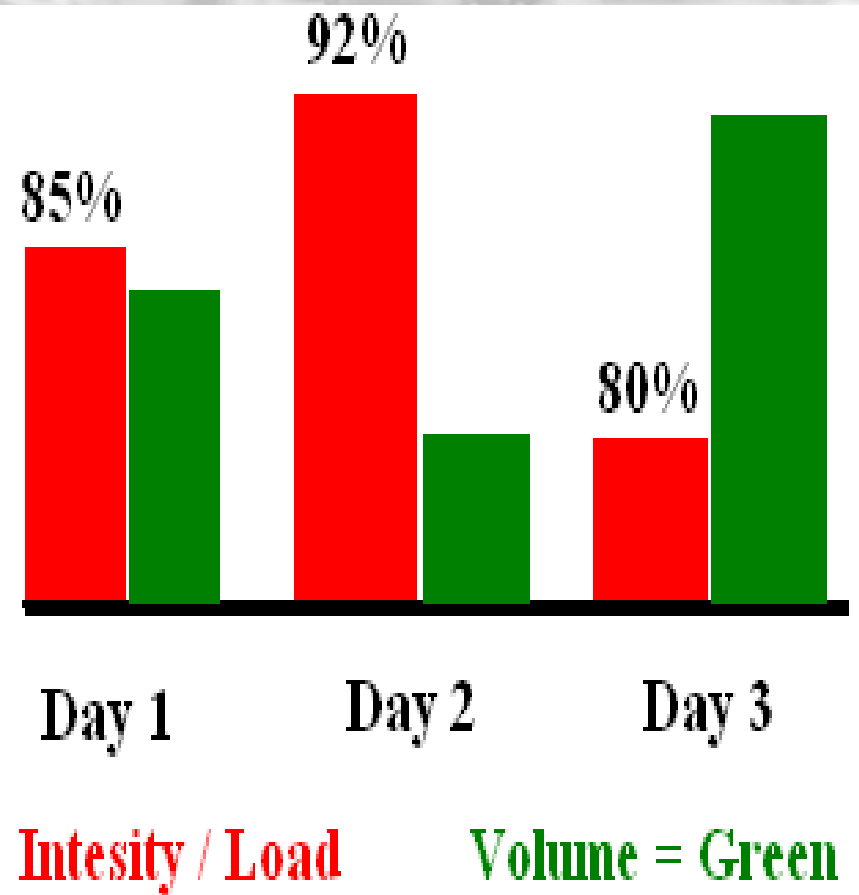
Chernoff Effect

- **Training the upper body to help recovery of the legs from track training.**
- **Lifting upper body one day then lower body the next day, causes the opposite body part to recover.**

Strength Vs Speed

- **When choosing your methods of training during the season be aware that constantly lifting heavy weight slow you can make you can train the nervous system to become slower.**
- **Calf Training – Sand Example**

Strength vs Speed



Improving Performance

- **Explosive Strength Deficit Test**
 - An effective way to decide if an athlete needs to develop more strength (through strength training) or more speed (through plyometric and explosive training)
- **To Develop Speed Strength**
 - Use 55% - 75% of 1-Repetition Maximum
- **To Develop Strength**
 - Use 80% - 95% of 1-Repetition Maximum

Biofeedback Training Guidelines

- Vertical Jump Guidelines
- Hand Strength Guidelines
- Eye Function Guidelines
- Functional Feedback from lifts

Questions?

- Thank you for your interest!
- Please feel free to visit:

www.xlathlete.com

600 Videos - Free

200 Drill Sheets - Free

Coaching Tools - Free

Articles - Free

XLATHLETE

References

- Brunner, Rick. & Tabachnik, Ben. Soviet Training Methods and Recovery Techniques, Soviet Press 1991
- Gambetta, Vern. & Winckler, Gary. Sport Specific Speed, Gambetta Sports Systems Inc. 2001
- Henson, Todd Maximum Velocity Mechanics, 2004 USATF Annual Meeting. Portland, OR
- Valdimir M. Zatsiorsky Ph.D. Science and Practice of Strength Training, Human Kinetics 1995
- Winckler, Gary Starting and Acceleration Studying Speed as a Skill, Presentation 2006
- Yessis, Michael, Ph.D. Soviet Sports Review, Published 1967-1994
- Yessis, Michael, Ph.D. Explosive Running, Contemporary Books 2000