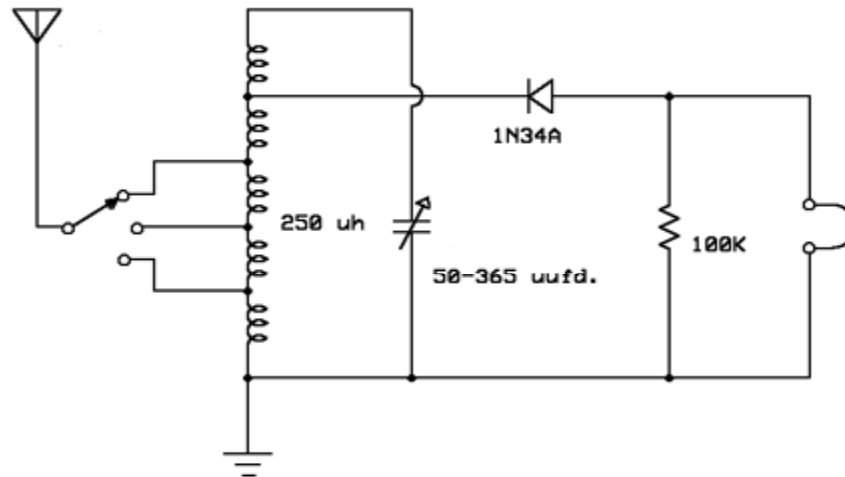


ROTATIONAL & OSCILLATORY FACTORS IN LOCOMOTIVE MECHANICS



Boo Schexnayder

Oscillations

Oscillation

- Repetitive Movements
- Energy Input / Output Ratio
- Frequency Dependence

Classifying Oscillatory Movements

- External Oscillations
- Internal Oscillations
 - Distal Oscillations
 - Proximal Oscillations
 - Countering Oscillations

External Oscillations

Sinusoidal Path of the Center of Mass

- Elastic Loading & Energy
- Displacement Enhancement
- Creating a Vertical Oscillatory Environment

Horizontal Force Production Prerequisites

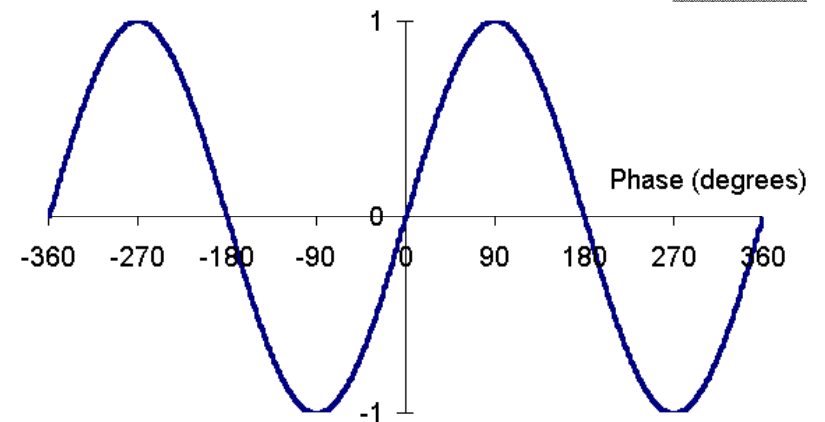
- The Drive Phase
- Inherent Horizontal Generation

Breakdowns in the Wave

- Force Production Decrements
- Instability and Grounding Reflexes

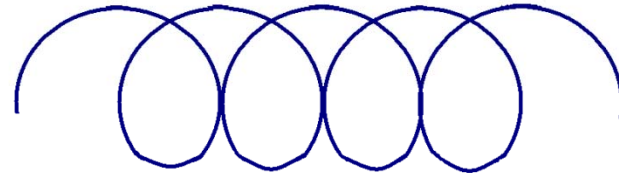
Sport Specific Applications and Issues

- Sprints
- Hurdles
- Jumps
- Throws



External Oscillations

Rotational/Translational Models



Progression/Regression Models



Distal Oscillations

Amplitude of Motion

- High Amplitude and Efficiency
- Prices of Diminished Amplitude

The Elastic Pendulum Model

- Elastic Energy Generation
- Complicating Factors – Transferring Angular Momentum

Tuning the Pendulum

- Mechanics and Tools
- Effectiveness & Cost

Countering Oscillations

- Direction
- Magnitude & Radius

Specific Applications

- Sprints
- Hurdles
- Jumps
- Throws

Proximal Oscillations

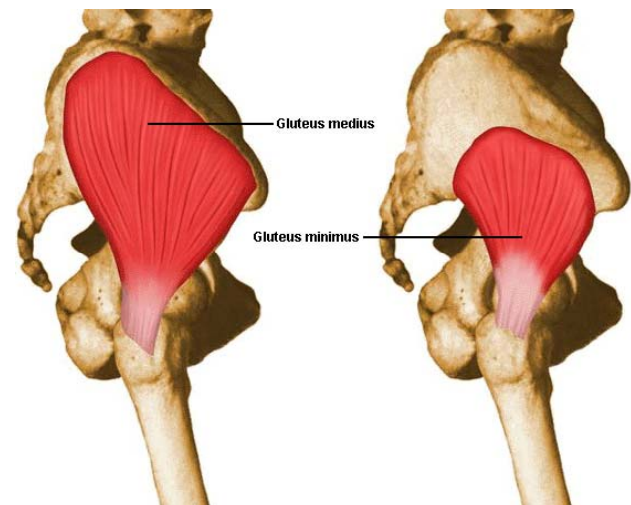
Pelvic Oscillations

- Elastic Energy
- The Spinal Engine Theory
- Pelvic Origination
- Planes

Countering Oscillations

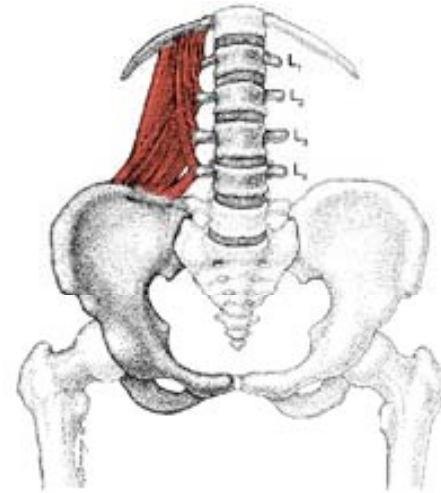
Transverse Oscillations

- ⦿ Rotational Musculature
- ⦿ Lateral -Rotational Movement Relationships
- ⦿ Training Rotation
- ⦿ Countering Oscillations



Frontal Oscillations

- Oscillatory Musculature
- Countering Oscillations



Pelvic Oscillations

- The Figure 8 Oscillatory Pattern
- Degradation
 - Instability
 - The Flexion Reflex
- Applied Considerations
 - Pelvic Origination & Hip Flexion
 - Stride Length and Displacement Issues
 - Rotational Countering – Necessity and Magnitude
 - Amplifying & Symmetry of Oscillation in Hurdling
 - Pelvic Oscillations and Steering
 - Countering Oscillations and Separation in the Throws

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