

Concepts and Applications for Developing Biomotor Qualities to Enhance Short Sprint Finishes

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Discussion Outline

- *Biomotor Qualities for Power/Speed Athletes
- *Paradigm for Adaptation Readiness
- *Physiological Considerations
- *Base Theories
- *A Core Training Mesocycle Hypothesis

Biomotor Qualities

- *Speed
 - *Event Specific
 - *Global
- *Strength
 - *Absolute – starting or inertial
 - *Relative
 - *Power Indices
 - *Elastic
 - *Speed
- *Skill – technique or form
 - *Sprint Specific
 - *Power Demands
 - *General Efficiencies
- *Stamina – work capacities
 - *Base of Specific Demands
 - *Base of General Demands
 - *Complexity of Training Units and Multi-lateral adaptations
- *Suppleness
 - *Muscle
 - *Joint
 - *Fascial
 - *Neurological Inhibition

Paradigm for Adaptation Readiness

- *Stimulus
- *Adaptation Responses
- *Stabilization

*Actualization

Physiological Considerations

- *Enzymatic Activity – mitochondrial factors
- *Protein Functions and Communications
- *Bioelectric Systems
 - *Neurotransmitters
 - *Fascial Chains and Communications
- *Immune / Endocrine Relationships (The Axis)
 - *Hypothalamus – controller of many body functions
 - *Thalamus – sensory control center
 - *Thymus – immune response center
 - *Thyroid – regulates metabolism
 - *Pituitary – master gland (hormone control)
- *Waste Products and Catabolic Reactions
- *Structures
 - *Elastic
 - *Tendons
 - *Ligaments
 - *Fascia
 - *Bursae
 - *Muscle
- *Structures continued
 - *Muscle
 - *Slow Twitch (IA)
 - *Fast Twitch (IIA, IIB)
 - *Proprioceptors (space and time)
 - *Muscle Spindle
 - *Golgi Tendon Apparatus
 - *Pacinian Corpuscle (subcutaneous)
 - *Ruffini Fibers
 - *Nociceptors (pain)

- *CNS
 - *Sympathetic – motor (thoracolumbar)
 - *Parasympathetic – involuntary, system specific
 - *Neurochemical Reactions
- *Effect of Mechanics on Biological Systems
 - *Soft Tissue Wellness
 - *Substrates
 - *Resynthesis Time
 - *Systemic System Shift
 - *Chronic Overload Syndrome

Base Theories

- *A Base of What?
- *Acceleration Skill, Speed Skills, Endurance Skills
- *Specificity
 - *Biochemistry
 - *Motor Demands
 - *Volitional Harmony (Hunter Attitudes)
 - *Volume, Intensity, and Density

A Core Training Mesocycle Hypothesis

Sunday

- *Active Rest
- *Sleep Factors
- *Diet Factors
- *Acute Relieving Syndrome

Monday

- *Specific Warm-up / Prehab Routines
- *Acceleration Development
 - *10m - 40m x 9 - 18 runs (blocked format)
 - *Start Positions / Surfaces
 - *Resisted / Assisted
 - *Lactate Discussion
- *Power Development
 - *Multiple Jumps (contacts, distances, timed)
 - *Multiple Throws
- *Weight Training
 - *Olympic Lifts (heart rate / lactate)
 - *Pressing Movements
 - *Bench – varied (swiss ball)

- *Push Press
- *Leg Series
 - *Squats – dumbbells and barbells
 - Front
 - *Back
 - *Lateral
 - Jump
- *Weight Training Continued
 - *Leg Series Continued
 - *Step-ups
 - Dynamic
 - *Static – postural stabilizers
 - *Lunges
 - *Russian Twists
 - *Negative Toe Risers
 - *Cool Down
 - *Bike
 - *Jog – Skip (vibration and lactate)
- *Physiotherapy
- *Diet and Supplement Factors

Tuesday

- *Specific Warm-up / Prehab Routines
- *Technical Runs
 - *Motor synchronization bleed runs
 - *Grass building runs
 - *Varied speed runs
- *Elastic Endurance Block
- *General Strength Routines
- *Medicine Ball Routines
- *Hurdle Mobility Series (note HR duration)

Tuesday, cont.

- *Weight Training
 - *Prehab
 - *Rehab
 - *Joint Specific Work
 - *Anatomy Train Development
- *Cool Down
- *Physiotherapy

Wednesday

- *Specific Warm-up / Prehab Routines
- *Special Speed Endurance / Alactic Schemes
 - *Up-backs (50m – 100m)
 - *50m – 80m runs at 80, 90, 90+
 - *Sets / reps
 - *Rest to work ratios
 - *Surface / Environmental factors
- *Power Development – Endurance Loads
- *Weight Training
 - *Lactate Boost Effect

- *Complex Leg Series
- *Prescribed Russian Twists
- *Cool Down – extended
- *Physiotherapy
 - *Extended
 - *Baths
- *Diet – Supplement Changes

Thursday

- *Mirrors Tuesday
- *Reduction in Volume and Density
- *Increased Rest, Pace, and Volitional
- *Factors
- *Prolonged Therapy Session

Friday

- *Mirrors Monday (Ladder Format)
- *Reduction in Volume
- *Increased Rest Variables
- *Simplified Weight Room Schemes

Saturday

- *Specific Warm-up / Prehab Routines
- *Speed Endurance
 - *Time of Year – volume and intensity
 - *Rest Intervals
 - *Environmental and Health Factors
 - *Race Models
 - *Round Endurance Statistics
- *General Strength
 - *Postural Demands
 - *Glycogen Depletion
- *Hurdle Mobility
- *Vibrational Cool Downs
- *Extended Physiotherapy
- *Prolonged and Complex Baths
- *Diet and Nap Theories