

Watch the presentation to this PowerPoint at the link below.

Advanced Principles in Programming
presented at cvasps.com conference

Advanced Principles in Programming

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UNIVERSITY OF MINNESOTA

Theories based on Advance Biochemical Programming

- Intensity and Duration should be the focal point of the program for that day.
- Specificity of exercise program is critical to adaptation

Maxim Sokolov Moscow 2003 - VN Seluyanov – 1996 - Vladimir Platonov – Issurin - Yessis in Conversation



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Theories based on Advance Biochemical Programming

- Train in a method so all Systems, Organs, Plastic Structures of the metabolism, Grouping of Cells and Cells Adapt to same Stress- Results are going to be deep adaptations with less negative stress response because of less stress on the functional reserves of adaption energy.
- Pull the organism in multiple directions is not optimal for the highest result. Ex-Triathalon and Powerlifting



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Biochemical Programming/High Speed

- Training at high-speed, intensive loads is accompanied by the largest changes in the nervous system apparatus of muscle – CNS, myelination – sarcoplasmic reticulum (site of calcium release, facilitates muscular contraction, and the myoglobin and creatine phosphate contents – **How? High Speed Methods**

Biochemical parameters of fitness of the organism - Russian

Theories Based on Advance Biochemical Programming

- **Biochemical Control of your programming through - Intensity and Duration** should be the focal point of the program for that day
- Your use of Block Methods or Conjugate you can controlled by the Biochemical aspects of training.

Theories Based on Advance Biochemical Programming

- Since biochemical adaptive changes do not develop simultaneously, blocks of oxidative, lactic, and alactic work is needed. This can be done in the offseason - Protasenko B - N.N Yakovlev -

“Preparation that entails the use of both types of training concurrently demand energy needs that surpass the limits of homeostatic regulation. Correspondingly, stress reactions become stronger. This more strained metabolic and hormonal body environment suppresses homeostatic responses and has a deleterious effect on workloads intended to develop basic athletic abilities. Such conflicting responses, which are typical of mixed training among high-performance athletes, lead to a decline in general aerobic abilities, a reduction in muscle strength, and cases of overtraining.”

- VLADIMIR ISSURIN



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Theories Based on Advanced Biochemical Programming

- **Control of your programming through - Intensity and Duration should be the focal point of the program for that day**

Intensity = Death Ground 100%

Duration = **Time Per Set**

Set durations should be maintained while focusing on sport specific training

Benefits Of Time Training

- Increased Density Per Set
- Competitiveness/Competition of athletes
- AFSM – Dynamic Correspondence
- Regulation of Specificity of sport in Regard to duration and energy systems
- Regulation of the Biochemistry of Training



Increased Density Per Set

- At High Speed High-Increased Volume/increase speed/reduced Duration increases buy %50 = Density Increased

Example 1 - Prescribed 100lbs Set of 8 reps took 12 seconds – then trained for time = $800 / 12 \text{ seconds} = 66 \text{ pounds per second}$

- Example 2 = Train For time 12 seconds = 12 reps at 100lbs = 100lbs per second – 35% Increase.



Hex Deadlift	T	100 - 125	2	00:00:5:10
PW/ 15 Rest BB				ISO
Cuban PRSS INC F8	5		2	
PW/ 15 Rest BB				
Ankle Band Work	8		2	Each Side
Squat Drop Jump	T		2	00:00:7:10
PW/ 15 Rest BB				Set Drop off
4 way neck	6		2	
				Reactive
Hex Deadlift	T	345 - 370	2	00:00:7:10
SL Hex Deadlift	T	65 - 75	3	00:00:7:10
PW/ 30 Rest BB				oc-D
Hip Flex Prone oc	T		3	00:00:7:10
PW/ 30 Rest BB				OC-D
DB BO Row	T	85 - 90	3	00:00:7:10
BENCH PRESS	5,3	165 - 220	1,1	
PW/ 30 Rest BB				
Med Ball Pass	5		2	
PW/ 30 Rest BB				OC-D
BENCH PRESS	T	165 - 180	2	00:00:7:10
BENCH PRESS	T	100 - 115	3	00:00:7:10
PW/ 30 Rest BB				oc-D
GH HYPR Incline	5	→N/A - →N/A	3	00:00:7:10
PW/ 30 Rest BB				OC-A
DB Shoulder Press	T	25 - 30	3	7 - OC-D
Band Tricep Extension	T		2	00:00:7:10
PW/ 30 Rest BB				oc-D
Bicep shock curls	T		2	00:00:7:10
PW/ 30 Rest BB				
90 90 Grion ISO Hold	T		2	00:00:7:10

Matson, Taylor

Hex Deadlift				
Cuban PRSS INC F8				
Ankle Band Work				
Squat Drop Jump				
4 way neck				
Hex Deadlift				
SL Hex Deadlift				
Hip Flex Prone oc				
DB BO Row				
BENCH PRESS				
Med Ball Pass				
BENCH PRESS				
BENCH PRESS				
GH HYPR Incline				
DB Shoulder Press				
Band Tricep Extension				
Bicep shock curls				
90 90 Grion ISO Hold				



Dynamic Correspondence

CRITERIA FOR DYNAMIC CORRESPONDENCE:

- THE AMPLITUDE AND DIRECTION OF MOVEMENT
- THE ACCENTUATED REGION OF FORCE PRODUCTION
- THE DYNAMICS OF THE EFFORT
- THE RATE AND TIME OF MAXIMUM FORCE PRODUCTION
- THE REGIME OF MUSCULAR WORK

History On Undulated Model

- History has show a large number of variations of training in weekly model.
- Day 1 = Train at performance Zone
- Day 2 = Under Distance Training – Short duration High Stress, Partial movements / High Power/ Speed
- Day 3 = Longer Distance Running / Tempo work / Bodybuilding

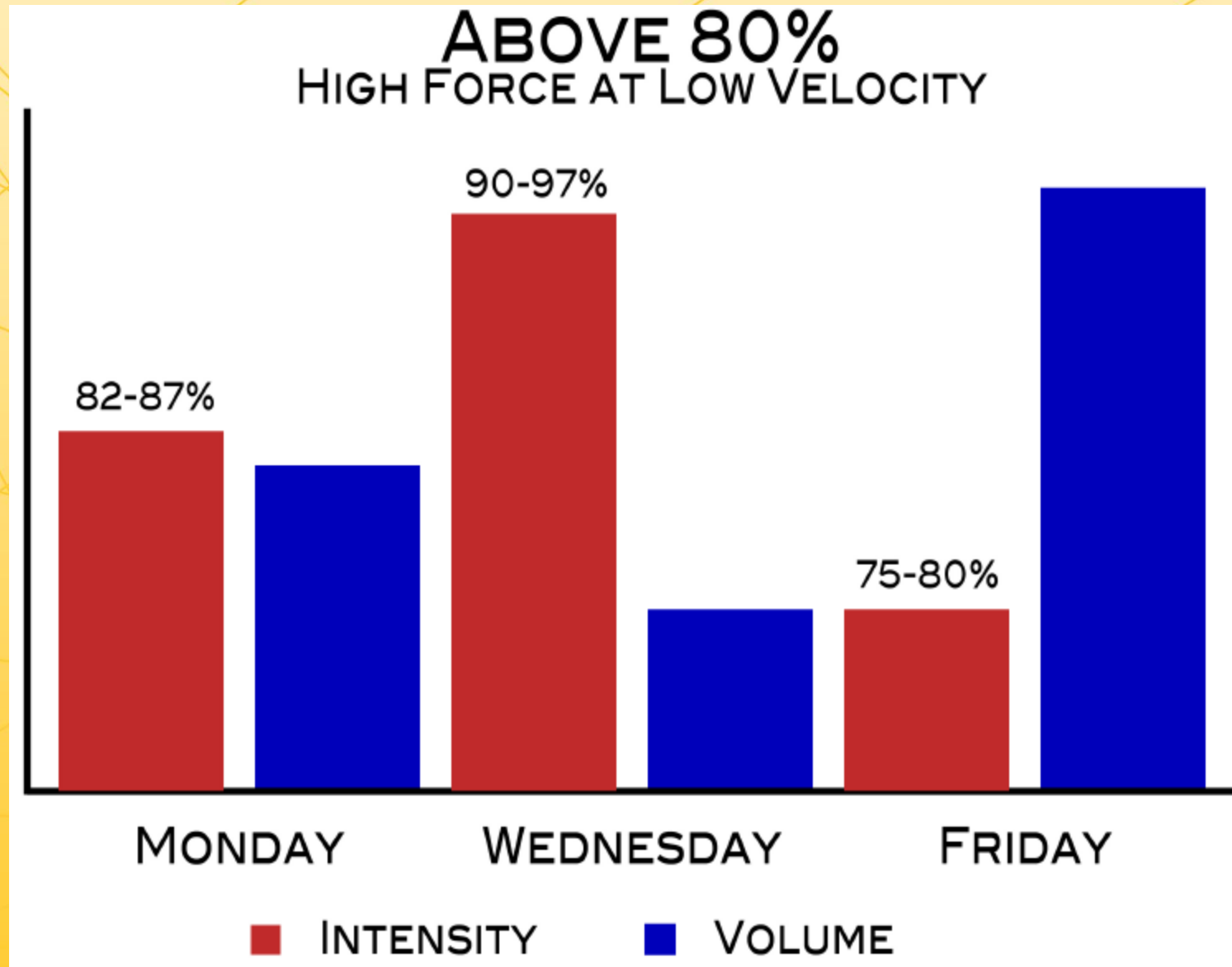


Sets for Time in Undulated Model

Triphasic Loading For Timed Sets	Day 1 – Loading Volume-Medium Load - Medium	Day 2 – Loading Volume- Low Load - High	Day 3 – Loading Volume- High Load -Low
Strength Athlete	5 Seconds	3 Seconds	7 Seconds
Strength Athlete	7 Seconds	5 Seconds	10 Seconds
Strength Endurance	15 Seconds	10 Seconds	17 Seconds
Endurance Strength	25 Seconds	17 Seconds	32 Seconds
Endurance	32 Seconds	25 Seconds	40 Seconds
Endurance	40 Seconds	32 Second	47 Seconds



Heavy Loading for Undulating Weekly Model



80% - 55%

HIGH FORCE AT HIGH VELOCITY

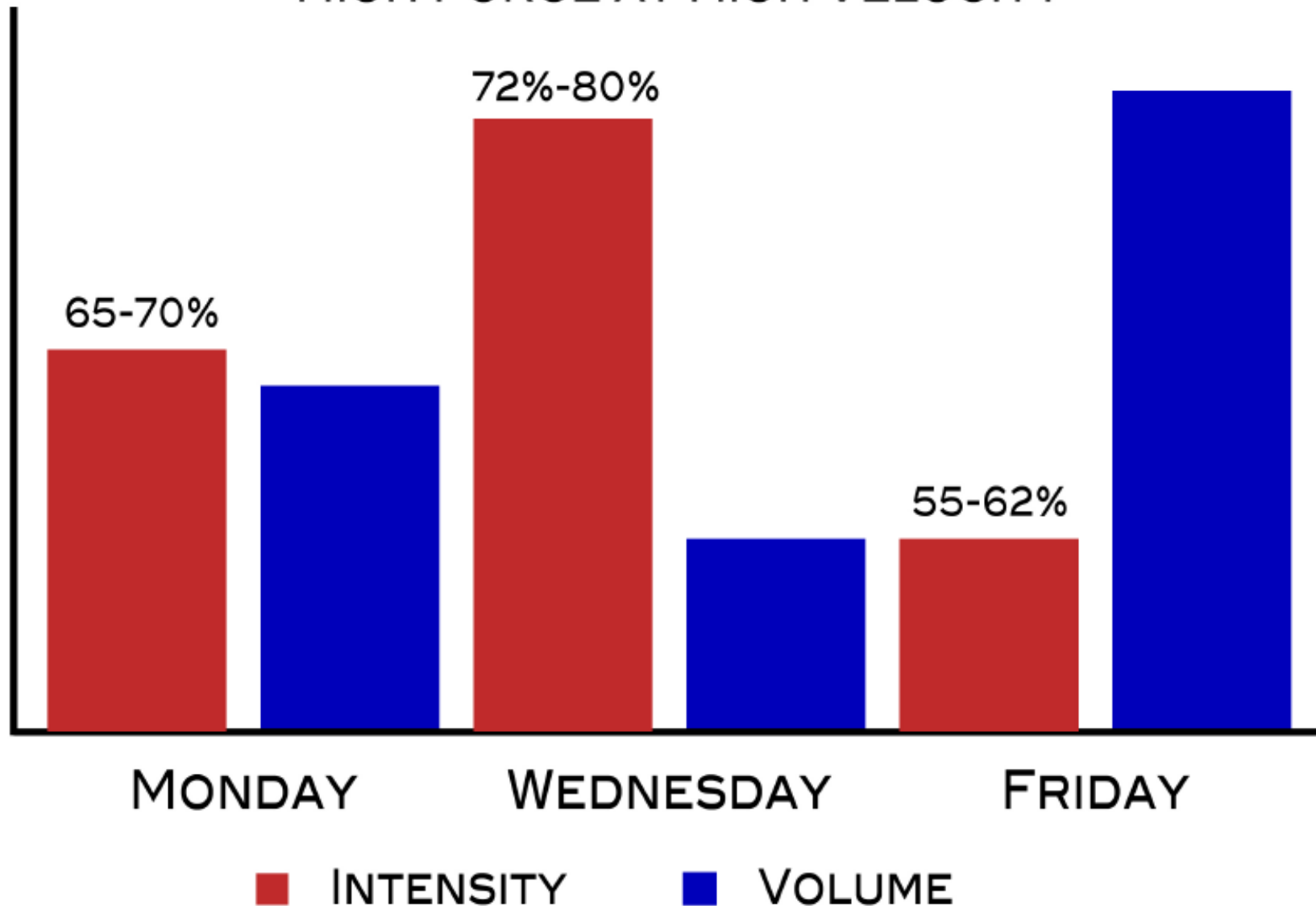


TABLE 6.1: BELOW 55% LOADING VARIABLES

PARAMETER	APPLIED FOR SPORT SPECIFIC PEAKING	MONDAY LOADING (IDEAL TIME)		WEDNESDAY LOADING (BELOW IDEAL TIME)		FRIDAY LOADING (ABOVE IDEAL TIME)	
		SET DURATION (SECONDS)	LOAD	SET DURATION (SECONDS)	LOAD	SET DURATION (SECONDS)	LOAD
STRENGTH SPEED	<ul style="list-style-type: none"> • SHOT PUT • FOOTBALL: LINEMAN • VOLLEYBALL 	5	35-40%	3	45-55%	7	25-30%
SPEED STRENGTH	<ul style="list-style-type: none"> • FOOTBALL: SKILL PLAYERS • BASEBALL • SOFTBALL • 100M SPRINTER 	7		5		10	
STRENGTH ENDURANCE	<ul style="list-style-type: none"> • HOCKEY • BASKETBALL 	15		10		17	
ENDURANCE STRENGTH	<ul style="list-style-type: none"> • SOCCER • MEN'S/WOMEN'S LACROSS • SWIMMING: 50-200M 	25		17		32	
ENDURANCE (MODERATE)	<ul style="list-style-type: none"> • SWIMMING: 200M+ • 400M RUNNER 	32		25		40	
ENDURANCE (LONG)	<ul style="list-style-type: none"> • 800M+ RUNNER • DISTANCE SWIMMER • ROWING 	40		32		47	

Antagonistically Facilitated Specialized Methods of Training

- What is it?
- Based on Sherrington's Law of Reciprocal Inhibition - Yessis and Siff
- AFSM training is also centered on the research of one of the USSR's leading Sports Scientists, Leo Matveyev



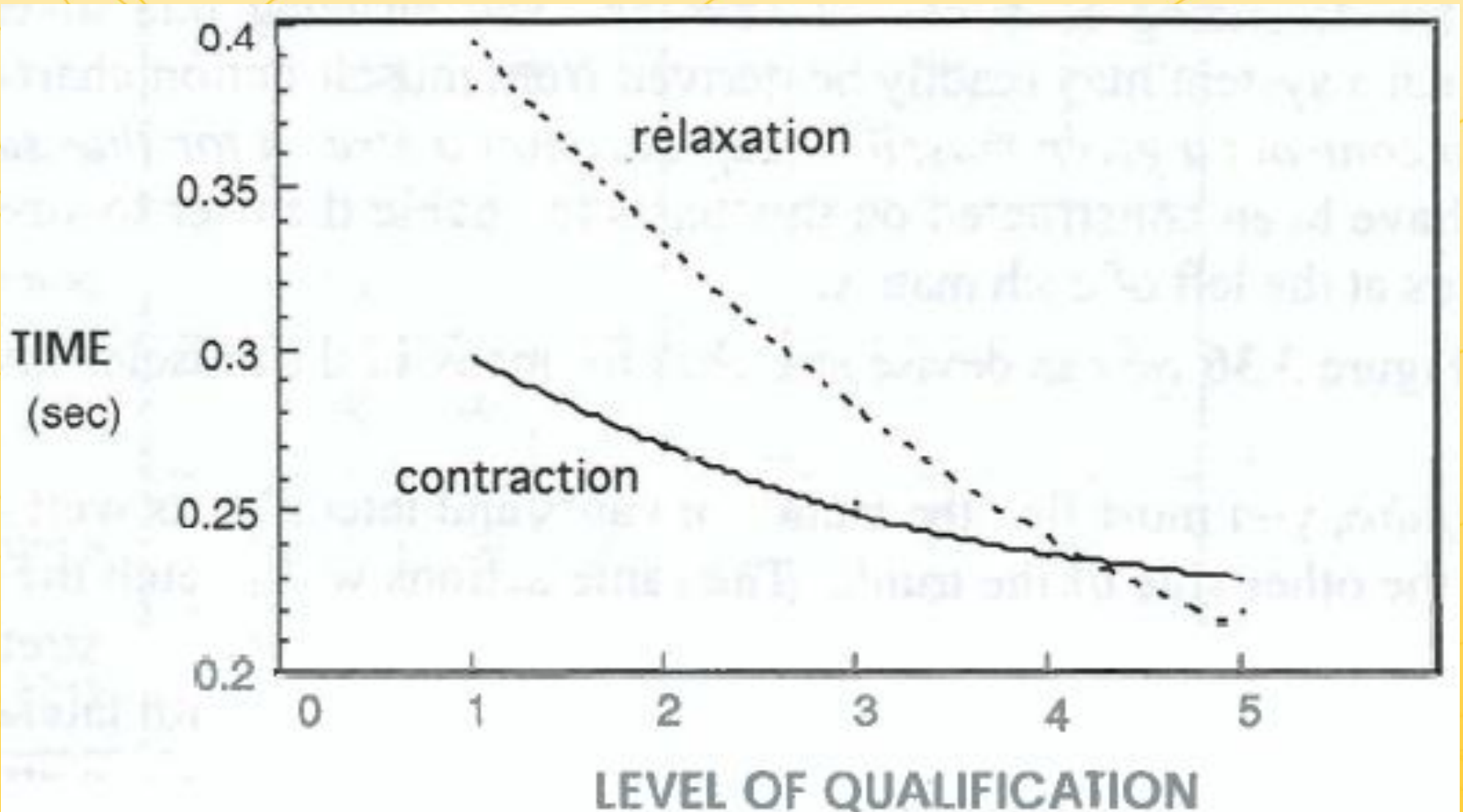
Antagonistically Facilitated Specialized Methods of Training

- Matveyev found that elite athletes could relax their muscles almost 200% faster than novice athletes
- -Even Level 4 athletes(right below Master of Sport in the USSR system) were approximately 50% slower in relaxation speeds than Master's of Sport

Conversation Yessis -



AFSM



Example 1: Minnesota Hockey

- Took 6 athletes and trained at sub-maximal high velocity loads
- Loading varied from 25/30% -50%
- Athletes were chosen based on greatest need for speed and explosiveness
- Athletes had been in the Gopher strength program for 3 years, so strength levels were fairly high - Fast and Stronger



Antagonistically Facilitated Specialized Methods of Training

- We must utilize the Stretch Shortening Cycle(SSC)
- Why? Much higher levels of stored eccentric energy can be reapplied more forcefully towards the concentric movement
- So what do we do?
- Answer: AFSM Plyometrics/lifting/
- It simple - Push and Pull or Pull and Push

AFSM Plyometrics

- Similar to traditional plyometrics(i.e. Squat jump)
- **Key Difference: AFSM requires the forceful contraction of the antagonists, with simultaneous relaxation of the agonists prior to the movement's concentric action -**
- **Muscle Spindle -**



AFSM Plyometrics

Traditional Squat Jump

Squat Drop Jump

AFSM Full Range/Oscillatory

Bench Press Reactive

Bench Press 2POC

AFSM Biomechanics Consideration

Bench Press

Hex Bar SL Deadlift

Advantageous and
Disadvantageous OC

Advantageous and
Disadvantageous OC



Weekly Planning

- Weeks 1-4 GPP – **Compartmentalize-various**
- Week 5-6 Eccentric Block -Time per sets
Day 1/20s – Day 2/5s – Day 3/32's
- Week 7-8 Isometric Block time per Set Day
1/20s – Day 2/5s – Day 3/32's
- Week 8-9 Dynamic Block Time per Sets Day
1/10s – Day 2/5s – Day 3/15s



Weekly Planning

- Weeks 10-11 download
- Week 12 – 13 Biometric Block -Time per sets
Day 1/7s – Day 2/5s – Day 3/10s
- Week 14-15 - 50-25% ASF_M Block time per
Set Day 1/7s – Day 2/5s – Day 3/10s
- Week 16-17 - 50-25% ASF_M Block Time per
Sets Day 1/7s – Day 2/5s – Day 3/10s



Tri Phasic Undulating Model

Load	Day 1	Day 2	Day 3
Heavy	85-90%	92-100%	75-82%
Light	65%	75-80%	45-55%
Sub Max High Velocity	35-40%	45-50%	25-30%



Sub-Maximal High Velocity Day

- Used near the competitive season as a peaking method
- Utilizes very light loads from 25-50% in order to move at higher velocities
- Higher velocity movements are more closely associated with most sporting actions



TABLE 2.4: DURATION OF RESIDUAL TRAINING EFFECTS (RTE) FOR DIFFERENT MOTOR ABILITIES

MOTOR ABILITY	RTE (DAYS)	PHYSIOLOGICAL BACKGROUND
AEROBIC ENDURANCE	30 ± 5	INCREASED NUMBER OF AEROBIC ENZYMES, MITOCHONDRIA, CAPILLARY DENSITY, HEMOGLOBIN CAPACITY, GLYCOGEN STORAGE, AND HIGHER RATE OF FAT METABOLISM
MAXIMAL STRENGTH	30 ± 5	IMPROVEMENT OF NEURAL MECHANISM. MUSCLE HYPERTROPHY DUE MAINLY TO MUSCLE FIBER ENLARGEMENT.
ANAEROBIC GLYCOLYTIC ENDURANCE	18 ± 4	INCREASED AMOUNT OF ANAEROBIC ENZYMES, BUFFERING CAPACITY, AND GLYCOGEN STORAGE. HIGHER POSSIBILITY OF LACTATE ACCUMULATION.
STRENGTH ENDURANCE	15 ± 5	MUSCLE HYPERTROPHY, MAINLY IN SLOW-TWITCH FIBERS. IMPROVED AEROBIC/ANAEROBIC ENZYMES. BETTER LOCAL BLOOD CIRCULATION AND LACTATE TOLERANCE.
MAXIMAL SPEED	5 ± 3	IMPROVED NEUROMUSCULAR INTERACTIONS AND MOTOR CONTROL. INCREASED PHOSPHOCREATINE STORAGE AND ANAEROBIC POWER.

V Issurn



BACK SQUAT	▼	305 - 330	Roll I-band
	2	360 - 385	Spine Rolls
	1	440 - 455	Coach Watch
Pair Below	3	400 - 425	6:0:0:0
Pair Below	3	400 - 425	6:0:0:0
Pair Below	3	400 - 425	6:0:0:0
French Contrast	3	400 - 425	6:0:0:0
Hurdle Hop	4	\$N/A .. \$N/A	4 Height
Pair w/NO REST			
SQ Jump Weighted	4	\$N/A .. \$N/A	4 0:2:0:0
Pair w/NO REST			
Acc Band Jump Pause	4		4
4 way neck	T	\$N/A .. \$N/A	4 3:0:0:0:20:20
PW / 45 rest/BB/RT			10 sec 2-way
Wrist Flexion	T	\$N/A .. \$N/A	4 3:0:0:0:20:20
PW / 45 rest/BB/RT		Set - Hr	110
ANT TIB BND	T		4 2:0:0:0:20:20
DB Walking Lunge	T	145 - 155	3 Bands
PW / 45 rest/BB/RT			0:2:0:0:20:20
Cuban PRSS INC F8	T		3 0:0:3:0:20:20
PW / 45 rest/BB/RT		Set - Hr	110 Each Leg
Ankle Band Work	T		3 0:0:3:0:20:20
Glute Bar Lift	T	415 - 440	3 3:0:0:0:20:20
PW / 45 rest/BB/RT			
Hip FLX BND Pulls	T		3 0:0:3:0:20:20
PW / 45 rest/BB/RT		Set - Hr	110
Iso Ball Grion Squeeze	T		3 0:9:0:2:20:20

BACK SQUAT	▼	305 - 330	Roll I-band
	2	360 - 385	Spine Rolls
	2	440 - 455	CW TEST
Pair Below	3	400 - 425	0:3:0:0
Pair Below	3	400 - 425	0:3:0:0
Pair Below	3	400 - 425	0:3:0:0
French Contrast	3	400 - 425	0:3:0:0
Hurdle Hop	4	\$N/A .. \$N/A	4 Height
Pair w/NO REST			
SQ Jump Weighted	4	\$N/A .. \$N/A	4 0:2:0:0
Pair w/NO REST			
Acc Band Jump Pause	4		4 0:2:0:0
4 way neck	T	\$N/A .. \$N/A	4 0:0:0:0:20:20
PW / 45 Rest/ BB/RT			10 sec 2-way
Wrist Flexion	T	\$N/A .. \$N/A	4 0:0:0:0:20:20
PW / 45 Rest/ BB/RT			10sec E-Limb
ANT TIB BND	T		4 0:0:0:0:20:20
DB Walking Lunge	T	145 - 155	3 Bands
PW / 45 Rest/ BB/RT			0:2:0:0:20:20
Cuban PRSS INC F8	T		3 0:0:3:0:20:20
PW / 45 Rest/ BB/RT		Hr - Set	110 Each Leg
Ankle Band Work	T		3 0:0:3:0:20:20
Glute Bar Lift	T	415 - 440	3 0:3:0:0:20:20
PW / 45 Rest/ BB/RT			5 Heavy-5Light
Hip Flex Iso Prone	T	\$N/A .. \$N/A	3 0:3:0:0:20:20
PW / 45 Rest/ BB/RT		Hr - Set	110
Iso Ball Grion Squeeze	T		3 0:9:0:2:20:20

550	Sport Back Squat	3	305 - 330	Roll I-band
		2	360 - 385	Spine Rolls
		2	440 - 455	CW TEST
Pair Below		3	385 - 400	0:0:0:0
Pair Below		3	385 - 400	0:0:0:0
Pair Below		3	385 - 400	0:0:0:0
French Contrast		3	385 - 400	0:0:0:0
Hurdle Hop		4	\$N/A .. \$N/A	4 Distance
Pair w/NO REST				
SQ Jump Weighted		4	\$N/A .. \$N/A	4 0:0:0:0
Pair w/NO REST				
Acc Band Jump Pause		4		4 0:0:0:0
4 way neck	T	\$N/A .. \$N/A	4 0:0:0:0:10:20	
PW / 45 Rest/ BB/RT				10 sec 2-way
Wrist Flexion	T	\$N/A .. \$N/A	4 0:0:0:0:10:10	
PW / 45 Rest/ BB/RT				10sec E-Limb
ANT TIB BND	T		4 0:0:0:0:10:20	
Drop Lunge jump	T		3 Drop/Jump	
PW / 45 Rest/ BB/RT			OC 0:0:0:0:10:20	
Cuban PRSS INC F8	T	\$N/A .. \$N/A	3 0:0:0:0:10:20	
PW / 45 Rest/ BB/RT		Hr - Set	110 Each Leg	
Ankle Band Work	T		3 0:0:0:0:10:20	
550 Glute Bar Lift	T	415 - 440	3 0:10:0:0:10:10	
PW / 45 Rest/ BB/RT				
Switch Lunge	T	\$N/A .. \$N/A	3 0:10:0:0:10:10	
PW / 45 Rest/ BB/RT		Hr - Set	110	
OC Ball Grion Squeeze	T		3 0:10:0:0:10:20	

633	Hex Deadlift	T		2	0:0:0:0:5:10
	PW/ 15 Rest BB	EU		EU	ISO
	Cuban PRSS INC F8	5	\$N/A .. \$N/A	2	
	PW/ 15 Rest BB	EDT			
	Ankle Band Work	8		2	Each Side
	Squat Drop Jump	T	\$N/A .. \$N/A	2	0:0:0:0:7:10
	PW/ 15 Rest BB	EU		EU	Set Drop off
	4 way neck	6	\$N/A .. \$N/A	2	OC
				EU	Reactive
633	Hex Deadlift	T	445 - 475	2	0:0:0:0:7:10
275	SL Hex Deadlift	T	85 - 95	3	0:0:0:0:7:10
	PW/ 30 Rest BB	EDT		EUA	oc-D
	Hip Flex Prone oc	T	\$N/A .. \$N/A	3	0:0:0:0:7:10
	PW/ 30 Rest BB			EUA	OC-D
126	DB BO Row	T	95 - 100	3	0:0:0:0:7:10
360	BENCH PRESS	5,3	180 - 240	1,1	
	PW/ 30 Rest BB	ED			
	Med Ball Pass	5	\$N/A .. \$N/A	2	
	PW/ 30 Rest BB	EU		ED	OC-D
360	BENCH PRESS	T	180 - 200	2	0:0:0:0:7:10
360	BENCH PRESS	T	110 - 125	3	0:0:0:0:7:10
	PW/ 30 Rest BB			EU	oc-D
	GH HYPR Incline	5	\$N/A .. \$N/A	3	0:0:0:0:7:10
	PW/ 30 Rest BB	EU		ED	OC-A
90	DB Shoulder Press	T	25 - 30	3	7 - OC-D
	Band Tricep Extension	T	\$N/A .. \$N/A	2	0:0:0:0:7:10
	PW/ 30 Rest BB	ED		EU	oc-D
	Bicep shock curls	T	\$N/A .. \$N/A	2	0:0:0:0:7:10
	PW/ 30 Rest BB	EDT			
	Bench Abd Groin OC	T		2	0:0:0:0:7:10

Hex Deadlift				2	0:0:0:0:5:10
PW/ 15 Rest BB				EU	ISO
CP Ext Rot rev Band OC	T	\$N/A .. \$N/A		2	
PW/ 15 Rest BB				EUA	
Calf Raises	8			2	0:0:0:0:5:10
Squat Drop Jump	T	\$N/A .. \$N/A		2	0:0:0:0:5:10
PW/ 15 Rest BB	EU				
OC Ball Grion Squeeze	T	\$N/A .. \$N/A		2	0:0:0:0:5:10
	ED			EU	Reactive
Hex Deadlift	T	315 - 350		2	0:0:0:0:5:10
Hex Deadlift	T	190 - 220		3	Reactive
Pair w/	ED			EU	0:0:0:0:5:10
Bench Abd Groin OC	T	\$N/A .. \$N/A		3	0:0:0:0:5:10
Pair w/				EUA	OC-D
DB BO Row	T	40 - 45		3	0:0:0:0:5:10
BENCH PRESS	5,3	180 - 240		1,1	
Pair w/	ED				
Med Ball Pass	3	\$N/A .. \$N/A		2	
	EU			ED	OC-D+1
BENCH PRESS	T	180 - 200		2	0:0:0:0:5:10
BENCH PRESS	T	110 - 125		3	0:0:0:0:5:10
Pair w/	EU			ED	OC-D+1
Glute Bar Lift	T	275 - 305		3	0:0:0:0:5:10
Pair w/	EUA				OC
Delt BO Lat Reb Drop	T			3	0:0:0:0:5:10
Band Tricep Extension	10	\$N/A .. \$N/A		2	0:0:0:0:5:10
Pair w/	EU			ED	
Bar Curl	T	45 - 50		2	oc-A
Pair w/	EUA			OC	0:0:0:0:5:10
DB Shoulder Press	T	25 - 30		2	0:0:0:0:5:10

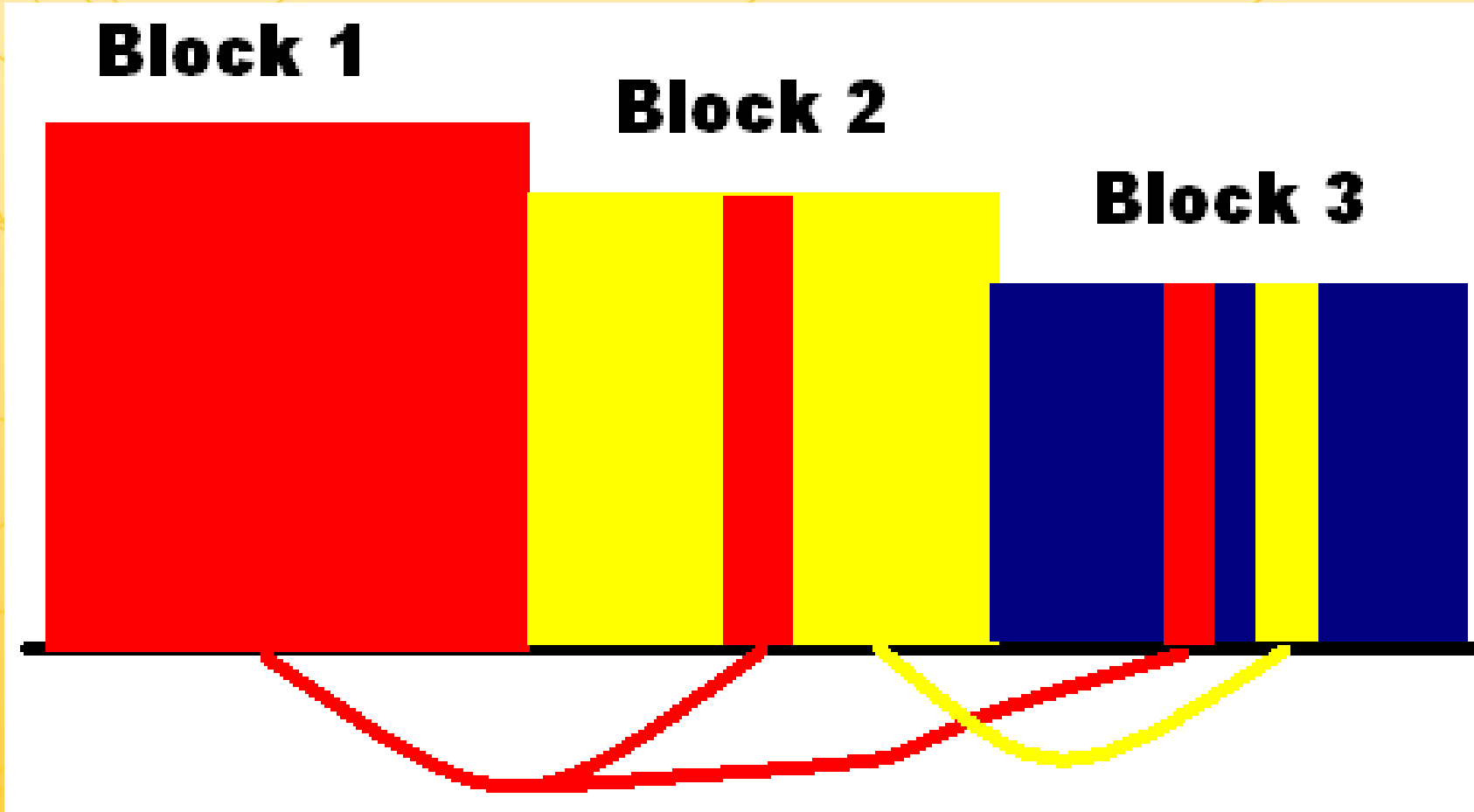
Quick thoughts

Biomechanics Full Range vs Oscillatory

Systemic vs localized



Block Training Sequencing



Issurin Block Periodization



BioMetrics – Sample Of Program

- Biometrics – Protocols
- Parametric Biometrics - Protocols - CD

M. Yessis, Yuri Verkhoshansky, Nosko NM, Vlasenko, S.,
B. Sinigovets , OGOLTSOV , Loginov, A., Shmonon, B.,
Penza, H., & Belinsky, V. Kulakov , Ogol'tsow ,



History of Biometrics

- Formerly Called cybernetics soviet union 1959, Yessis 1969
- Changed into autoregulation by some.
- Basic percent drop off 1-3%
- I first exposed by track coach Phil Lundin
- Methods of Drop off Metrics – Running, Speed – lifting ,Tendo bench everyday for 3 weeks, went from 3 reps to 12 Reps



Bio Feedback – Drop off

- Percent of Drop off – range from 1% to 3%
- Recovery Depends on level of athlete
- General Fitness Ability to Recover

1% - 2% Drop Off

Monday - Tuesday - Wednesday - Thursday - Friday - Saturday - Sunday



3% - 4% Drop Off

Monday - Tuesday - Wednesday - Thursday - Friday - Saturday - Sunday



Biometrics – Protocols

- Running – Taylor Matson – post workout
- 20 yards – best 2.6 – ran 8 reps under 2.7
- 6 weeks later
- 20 yards – best 2.5 – ran 22 reps under 2.6
- Jake Cepis
- 365 hex deadlift for 6 seconds for 13 Reps did 12 sets before dropping.



Parametric Biometrics - Protocols - CD

BENCH PRESS	12s	270 - 305	BF	0:12:0:0
Pair w/				
Thors Hammer	8		BF	Rest 30
Pair w/				
Cuban PRSS INC F8	6		BF	Rest 30
4-WAY MANUAL NECK	5		BF	Rest 30
Pair w/				
Leg Press Calf Raise	10		BF	Rest 30
Pair w/				Tendo
BENCH PRESS	2	160 -	BF	Drop off
SL Hex Deadlift	12s	205 - 235	BF	0:12:0:0
Pair w/				
ANT TIB BND	15		BF	Rest 30
Pair w/				
INCLINE SIT UP	6		BF	Rest 30
Delt Lat Rebound Drop	10		BF	Rest 30
Pair w/				
DB Shrug	12	65 -	BF	Rest 30
Pair w/				
Squat Jump				2 reps test

BENCH PRESS	1,1	125 - 160	BF	0:5:0:30
Pair w/				
Bam Bam	8		BF	Rest 30
Pair w/				
Cuban PRSS INC F8	6		BF	Rest 30
4-WAY MANUAL NECK	5		BF	Rest 30
Pair w/				
Leg Press Calf Raise	10		BF	Rest 30
Pair w/				Tendo
BENCH PRESS	2	125 -	BF	Drop off
Single Leg Iso DL	1,1		BF	Each Leg
Pair w/				0:5:0:30
ANT TIB BND	15		BF	Rest 30
Pair w/				
Pike SWB Abs	6		BF	Rest 30
OH LAT Raise	10	10 -	BF	Rest 30
Pair w/				
DB Shrug	12	65 -	BF	Rest 30
Pair w/				
Squat Jump				2 reps test



Biochemical Science

- Blocks of training certain biochemical substrates using various durations of activity these adaptations require sufficient time to transpire, 3 weeks of each “biochemical block” should be sufficient



Special Considerations-Future

- Building of the organism
- Sociobiology
- Activation Life - With Balance Words
- Shift in response – Flexors vs Extensors
- This much change may be hard for your programming. 27 different programs running.
- Molecuła



More Biochemical Science

- Prolonged exercise leads to marked increases in the mitochondrial counts, area, phospholipid content of muscle mitochondria, and glycogen content.
-
- Certain adaptive changes of enzyme activities and composition of functional biochemical systems are observed only after sufficiently long periods of training.
-
- The adaptive process follows the following sequence: 1. Increases in concentration of energy sources; 2. Increases in enzymatic activities and, 3. further perfection of the mechanisms for regulation of metabolism.
- Biochemical changes in muscle are natural factors of organization of functional activity. These factors define the utmost possible intensity and duration of exercise, restitution, and adaptive changes in muscles
- In the trained organism, the increases in mobilization, utilization, and restitution of energy sources are related for the most part with enzymatic adaptations and with changes of biochemical auto regulation of the metabolic processes.
- Disturbance of biochemical homeostasis may be achieved without drastically increasing volume and intensity but programming their distribution in the training cycle.
-
- Environmental factors also lead to changes in biochemical homeostasis that resemble those that occur during muscular activity.
-
- Training Intensifies the formation of all cellular material including Mitochondria, myofibrillar proteins, endoplasmic reticulum and various enzymes

Other References

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