

Comprehensive Program Design and Progression for Strength

Part 3: Competition Peaking

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Everything To Cover

- *1. Definition of Terms and Overall Research Results*
- *2. Understanding Research Limitations*
 - *3. Integrate "Types"*
 - *4. Intros and Tapers*
- *5. Programming vs. Periodization*
 - *6. Weekly Volume Allocation*
 - *7. Load Progression*
- *8. Autoregulation and Velocity-Based Strategies*
 - *9. Volume and Intensity Block Design*
 - *10. Individualizing Repetitions Performed*
- *11. Programming Strategies and Alterations to the Typical Macrocycle*
 - *12. True peaking examples*
 - *13. Overreaching*
 - *14. Volume with Low Reps?*
 - *15. Bodybuilding Examples*

**Today:
Part 3**



Today's Objectives

1. Understand the relationship between volume and hypertrophy and strength independent of repetition range
2. Understand the practicality of various repetitions ranges
3. Examine Intensity Blocks in Practice
4. Examine overreaching prior to a competition
5. A look at recent research in integration of models

Recalling Traditional Recommendations: Is it time to Question This?

- ▶ **Hypertrophy** – Moderate-High Repetitions/
Moderate-Low Intensity
- ▶ **Strength** – Low-Moderate Repetitions /High Intensity

Training emphasis	Repetitions	Intensity
Hypertrophy	8-12	65-75%
Strength	≤ 6	80-90%

Or, is there really just a volume effect?

$$\textit{Volume} = \textit{Sets} \times \textit{Reps} \times \textit{Wt. Lifted}$$

Low Vs. High Rep-DUP With Relatively Equated Volume

DUP-Low Rep (DUP-LR)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday & Sunday
Volume	8x6@75%		9x@80%		10x2@85%	
Exercise	Back Squat + Bench Press	Rest	Back Squat + Bench Press	Rest	Back Squat + Bench Press	Rest

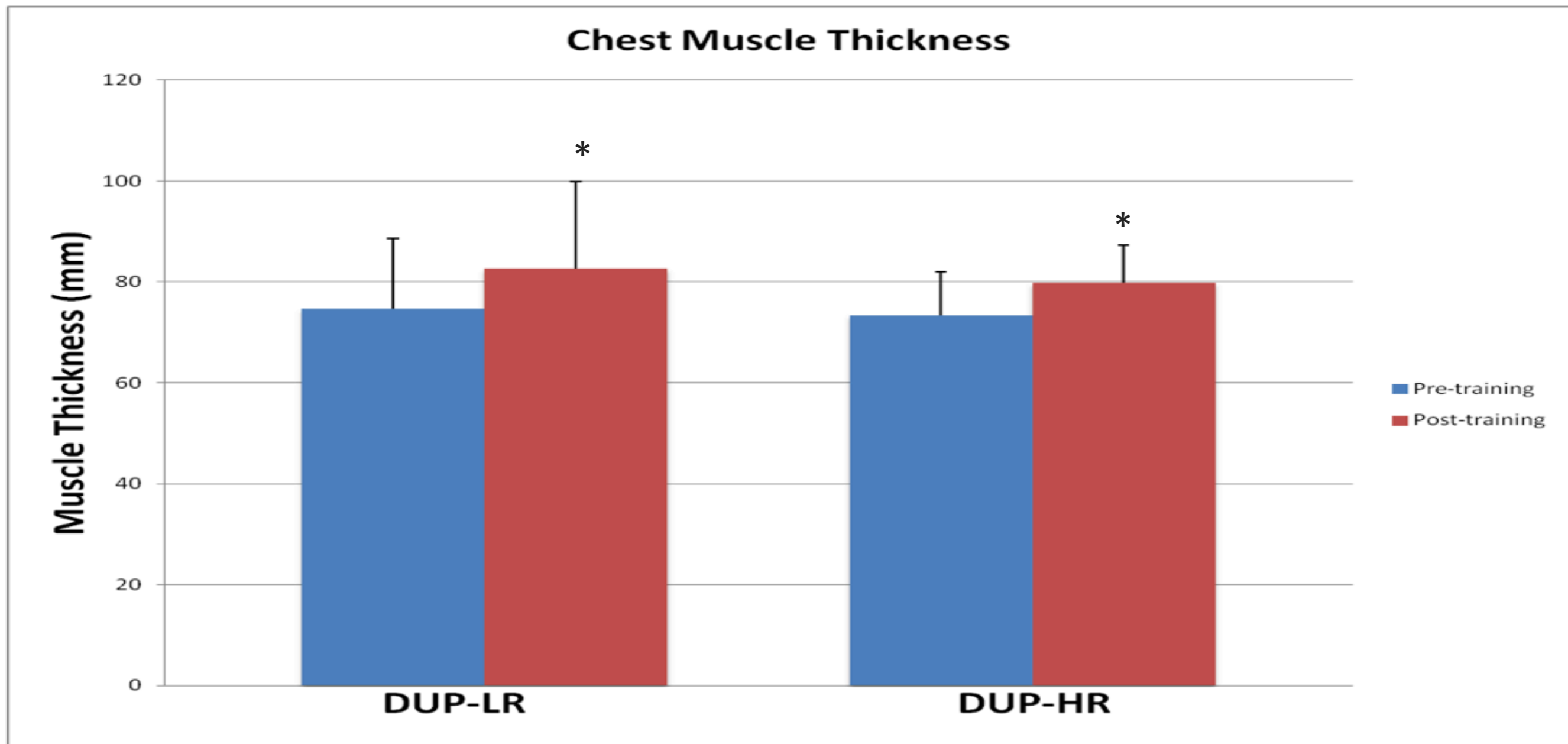
8,180kg.

DUP-High Rep (DUP-HR)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday & Sunday
Volume	4x12@60%		4x10@65%		5x8@70%	
Exercise	Back Squat + Bench Press	Rest	Back Squat + Bench Press	Rest	Back Squat + Bench Press	Rest

8,280kg.

Results: Chest Hypertrophy 8-Weeks of Training



Practicality of Equated Volume

4 X 12 @60% = 90 minutes

8 X 6 @75% = 180 minutes

High reps are more time efficient

Practical Implications

1. More time left, could train more?

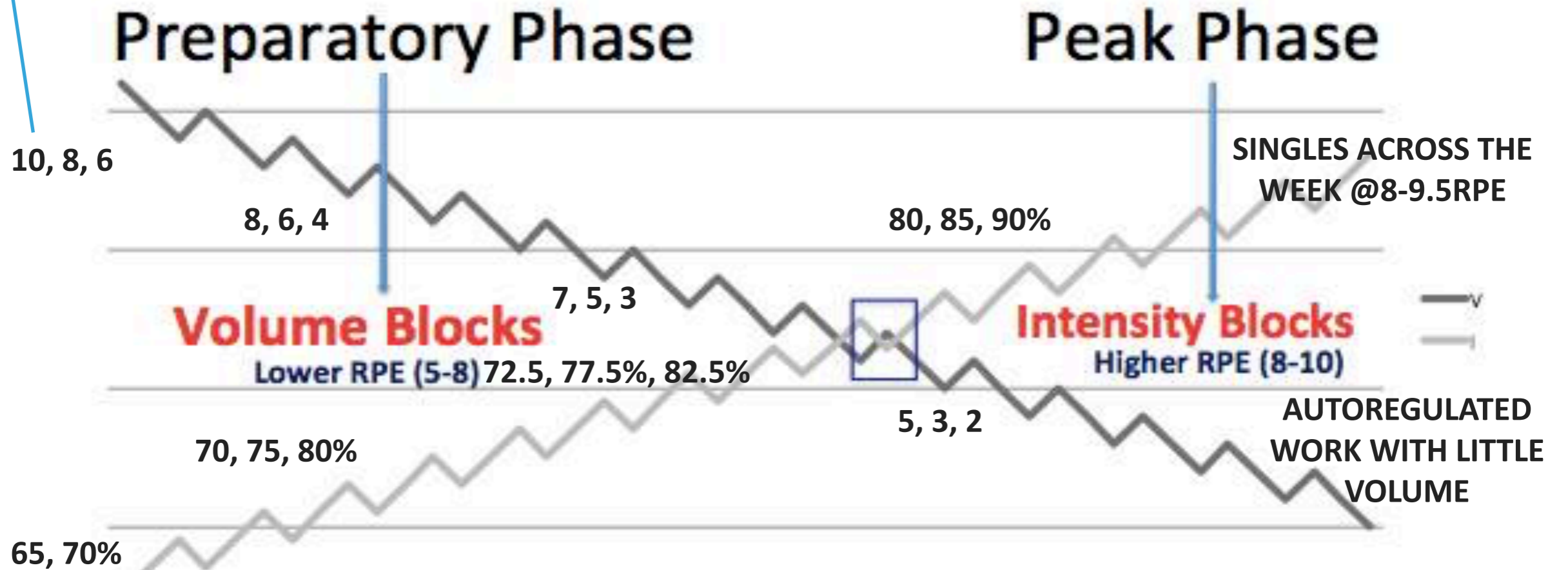
-Maybe not always the best answer

2. Simply finish earlier?

New Foundations:

Integrated Periodization Macrocycle

Repetitions
Across the
Week



Intensities
Across the
Week

- Daily Undulating Programming Strategy is used within each week
- Yet, this fits into Yearly Linear/Block Periodization Design

Stress per set increases as intensity increases

High Volume = Lower RPE Per Set

High Intensity = Greater RPE Per Set

Example Intensity Block

Wks. 1-4	Day I	Day II	Day III
Squat	3X5 @80%	4X3 @85%	4X2 @90%
Wks. 7-10	Day I	Day II	Day III
Squat	3X5 @82.5%	4X3 @87.5%	4X2 @92.5%
Wks. 13-16	Day I	Day II	Day III
Squat	2X5 @85%	3X3 @90%	X1 @9.5RPE

THIS IS JUST CONCEPTUALIZING AND INTEGRATING THE DISCUSSED PRINCIPLES

Peaking Phase:

Intensity Blocks in Practice

“Standard” Intensity In Practice

<i>Design: Int. Transition</i>	<i>Week of July 4th, 2016</i>	INTENSITY I (6/27/16)		
DAY	LIFT	SETS X REPS	WEIGHTS	LAST SET RPE
MONDAY	SQUAT	4X5	305	
	DEADLIFT	6X1	420	
	BENT OVER ROW	3X7 @6-8RPE	205	
TUESDAY	BENCH	4X5	230	
	CLOSE GRIP BENCH	3X6 @6-8RPE	245	
WEDNESDAY	SQUAT	5X3	340	
	BENT OVER ROW	3X6 @6-8RPE	225	
THURSDAY	BENCH	5X3, 1X1	250, 265	
	MILITARY PRESS	3X4 @7-8RPE	135	
FRIDAY	SQUAT (No Plus Set)	4X2, 2X1-3	350, 370	
	DEADLIFT	4X1	450	
	BENT OVER ROW	4X5 @6-8RPE	225	
SATURDAY	BENCH	Single @9RPE, 3X2 @87.5% of single	335	
	CLOSE GRIP BENCH	2X3 @7-8RPE	275	
	MILITARY PRESS	3X4 @6-8RPE	135	
<u>Working Max</u>				
Squat: 415lbs. (188kg.)				
Bench: 310lbs. (143kg.)				
Deadlift: 520lbs. (236kg.)				

Still Undulation at this Point, Reps are lower, RPEs will be higher

“True Peaking” Intensity In Practice

Design: Intensity	Week of March 6th, 2017	WEEK 1 (2-27-17)			WEEK 2 (3-6-17)		
DAY	LIFT	SETS X REPS	WEIGHTS	LAST SET RPE	SETS X REPS	WEIGHTS	LAST SET RPE
MONDAY	SQUAT	X1 @8RPE, 3X4 @75% of single			X1 @8RPE, 3X4 @75% of single		
	DEADLIFT	X2 @7-8RPE			X2 @7-8.5RPE		
	BENT OVER ROW	4X8 @6-8RPE			4X8 @6-8RPE		
TUESDAY	BENCH	Single @8RPE, 2X2 @85% of single			Single @8RPE, 2X2 @87.5% of single		
	MILITARY PRESS	4X6 @6-8RPE			4X6 @6-8RPE		
WEDNESDAY	SQUAT	X1 @7-8RPE, 3X3 @82.5% of single			X1 @7-8RPE, 3X3 @82.5% of single		
	CHINUPS	X30			X30		
	BENT OVER ROW	4X7 @6-8RPE			4X7 @6-8RPE		
THURSDAY	BENCH	Single @7-8RPE, 2X3 @80% of single			Single @7-8RPE, 2X3 @80% of single		
	CLOSE GRIP BENCH	3X4 @6-8RPE			3X4 @6-8RPE		
FRIDAY	SQUAT	X1 @8RPE, 3X2			X1 @9RPE, 3X2 @87.5% of single		
	DEADLIFT	Single @8-9RPE, 2X1 @90% OF SINGLE			Single @9RPE, 2X1 @90% OF SINGLE		
	BENT OVER ROW	3X6 @6-8RPE			3X6 @6-8RPE		
SATURDAY	BENCH (No Plus Set)	Single @8RPE, 2X2 @85% of single			Single @9RPE, 2X2 @85% of single		
	MILITARY PRESS	3X5 @5-7RPE			3X5 @5-7RPE		
	PULLUPS	X30			X30		

**Singles, still altering volume reps, allocating volume/intensity appropriately
(lightest single in the middle of the week)**

“True Peaking” Intensity In Practice

WEEK 3 (3-13-17)

<u>Design: Intensity</u>	<u>Week of March 6th, 2017</u>	<u>SETS X REPS</u>	<u>WEIGHTS</u>	<u>LAST SET RPE</u>
DAY	LIFT	X1 @8RPE, 2X3 @75% of single		
MONDAY	SQUAT	X1 @8RPE		
	DEADLIFT	4X8 @6-8RPE		
	BENT OVER ROW			
TUESDAY	BENCH	Single @8RPE, 2X2 @87.5% of single		
	MILITARY PRESS	4X6 @6-8RPE		
WEDNESDAY	SQUAT	X1 @7-8RPE, 2X3 @85% of single		
	CHINUPS	X30		
	BENT OVER ROW	4X7 @6-8RPE		
THURSDAY	BENCH	Single @7-8RPE, 2X3 @80% of single		
	CLOSE GRIP BENCH	3X4 @6-8RPE		
FRIDAY	SQUAT	X1 @9.5RPE, 1X2 @90% of single		
	DEADLIFT	Single @9RPE, 2X1 @90% OF SINGLE		
	BENT OVER ROW	3X6 @6-8RPE		
SATURDAY	BENCH (No Plus Set)	Single @9.5RPE, 2X2 @85% of single		
	MILITARY PRESS	3X5 @5-7RPE		
	PULLUPS	X30		

Singles, still altering volume reps, allocating volume/intensity appropriately (lightest single in the middle of the week)

Peaking Phase:

Run “Standard” Intensity Blocks and then a Peaking block (i.e. more singles for neuromuscular adaptation)

If multiple meets in a short time frame I would only use the true “peaking” once time, for the most important meet

Overreaching:

If using an overreaching block structure it so it ends 2-4 weeks out from competition, this way you can do low volume, high intensity work to take advantage of the progress and allow fatigue to dissipate

MASS “Overreaching” Prior to Peaking

<i>Design: Frequency/Overreach</i>	<i>Week of May 8th 2017</i>	WEEK 1 (5-8-17)		
DAY	LIFT	SETS X REPS	WEIGHTS	LAST SET RPE
MONDAY	SQUAT	4X6	182.5	8
	DEADLIFT	3X1-2	215	x2 @8
TUESDAY	BENCH	5X6	122.5	8
	CLOSE GRIP BENCH	2X7 @6-8RPE	90	Only 1 set
WEDNESDAY	SQUAT	SINGLE @7-8RPE, 3X4 @190kg	220, 190	8, 8
	BENT OVER ROW	3X8 @6-8RPE	80	
THURSDAY	BENCH	4X4 @7-9RPE	140, 140, 135, 135	8, 9, 8, 8.5
	CLOSE GRIP BENCH	3X5 @6-8RPE	100	
FRIDAY	SQUAT	6X3	200	7
	BENT OVER ROW	3X7 @6-8RPE	80	
SATURDAY	PAUSED BENCH	X2 @9RPE, 5X2 @87.5% OF DOUBLE	skipped due to pec/ shoul	
SUNDAY	SQUAT	SINGLE @8-9RPE, 4X2 @90% OF SINGLE	230, 207.5	8.5, 8
	DEADLIFT	5X1	225	6
	BENT OVER ROW	3X6 @6-8RPE	90	

Higher frequency, achieving volume with LOW reps (closer to competition), still have heavier day, integration of concepts...ONLY FOR 3 WEEKS, then taper to peak

MASS “Overreaching” Prior to Peaking

<u>Design: Frequency/Overreach</u>	<u>Week of May 15th 2017</u>	WEEK 2 (5-16-17)		
DAY	LIFT	SETS X REPS	WEIGHTS	LAST SET RPE
TUESDAY	SQUAT	5X6	185	8.5
	DEADLIFT	4X1-2	217.5	x2 @8
WEDNESDAY	BENCH	3X3 OR 2X4	100 OR 127.5	
THURSDAY	SQUAT	SINGLE @7-8RPE, 3X4 @7-9RPE	220, 195, 195, 195	7.5, 8, 8.5, 9
	BENT OVER ROW	3X8 @6-8RPE	80	
FRIDAY	BENCH	2X5 OR 2X3	125 OR 137.5	
SATURDAY	SQUAT	6X3	202.5	8
	BENT OVER ROW	3X7 @6-8RPE	85	
SUNDAY	PAUSED BENCH	X2 @9RPE, 2X2 @87.5% OF DOUBLE	150, 130	9, 7
MONDAY	SQUAT	SINGLE @8-9RPE, 5X2 @90% OF SINGLE	230, 207.5	9, 9
	DEADLIFT	5X1	227.5	7
	BENT OVER ROW	3X6 @6-8RPE		90
<u>Working Max</u>				
Squat: 230kg. (507lbs.)				
Bench: 157.5kg. (341.5lbs.)				
Deadlift: 245kg. (540.1lbs.)				

Higher frequency, achieving volume with LOW reps (closer to competition), still have heavier day, integration of concepts...ONLY FOR 3 WEEKS, then taper into to peaking block

MASS “Overreaching” Prior to Intensity

<i>Design: Frequency/Overreach</i>	<i>Week of May 24th 2017</i>	WEEK 3 (5-24-17)		
DAY	LIFT	SETS X REPS	WEIGHTS	LAST SET RPE
WEDNESDAY	SQUAT	5X5	187.5	5
	DEADLIFT	4X1-2	220	x2 @7
THURSDAY	BENCH	3X3	140	7
FRIDAY	SQUAT	SINGLE @7-8RPE, 3X4 @7-9RPE	220, 197.5, 197.5, 197.5	7.5, 8, 8, 8.5
	BENT OVER ROW	3X8 @6-8RPE	80	
SATURDAY	BENCH	X1 @8-9RPE, 2X2 @85% OF SINGLE	160, 135	9, 8
SUNDAY	SQUAT	5X3	207.5	9 - 9.5
	BENT OVER ROW	3X7 @6-8RPE	82.5	
MONDAY	PAUSED BENCH	X2 @9RPE, 2X2 @87.5% OF DOUBLE	160, 140	9.5, 7.5
TUESDAY	SQUAT	SINGLE @8-9RPE, 5X2 @90% OF SINGLE	240, 215	9, 8
	DEADLIFT	5X1	232.5	6
	BENT OVER ROW	3X6 @6-8RPE		90
<u>Working Max</u>				
Squat: 230kg. (507lbs.)				
Bench: 157.5kg. (341.5lbs.)				
Deadlift: 245kg. (540.1lbs.)				

Higher frequency, achieving volume with LOW reps (closer to competition), still have heavier day, integration of concepts...ONLY FOR 3 WEEKS, then taper into peaking block

Overreaching in the Peaking Phase

Achieve volume through low reps so that intensity can remain high

Will actually spike volume in the macrocycle

End block a few weeks before competition so you can focus on neuromuscular adaptations for the final few weeks to peak

Macrocycle?...It's not that hard

- ▶ Consistent with the principles, repetitions and volume will gradually decrease and intensity will gradually increase
- ▶ Run a taper after each block and an intro before each block
- ▶ However, that doesn't mean there can't be intermittent periods of overreaching
- ▶ Always be ready to troubleshoot and use the various methods of progression when necessary

Macrocycle?...It's not that hard

Wks. 1-4	Day I	Day II	Day III
Squat	4X8 @70%	5X6 @75%	6X4+ @80%

Wks. 7-10	Day I	Day II	Day III
Squat	4X7 @72.5%	5X5 @77.5%	6X3+ @82.5%

Wks. 13-16	Day I	Day II	Day III
Squat	4X6 @75%	5X4 @80%	6X2+ @85%

THIS IS JUST CONCEPTUALIZING AND INTEGRATING THE DISCUSSED PRINCIPLES

Maybe even 'overreach' in the middle before peaking

Wks. 1-4	Day I	Day II	Day III	
Squat	4X8 @70%	5X6 @75%	6X4+ @80%	
Wks. 7-10	Day I	Day II	Day III	
Squat	4X7 @72.5%	5X5 @77.5%	6X3+ @82.5%	
Wks. 13-16	Day I	Day II	Day III	
Squat	4X6 @75%	5X4 @80%	6X2+ @85%	
Wks. 19-21	Day I	Day II	Day III	Day IV
Squat	5X6 @75%	6X4 @80%	7X3 @85%	10X2 @87.5%

THIS IS JUST CONCEPTUALIZING AND INTEGRATING THE DISCUSSED PRINCIPLES

Previous 4 Weeks

- ▶ Four weeks of overreaching
 - ▶ Extra day of frequency and increased volume
 - ▶ Yes, this would spike volume in the middle of a macrocycle
 - ▶ Again, not everything is set in stone
 - ▶ Everything is open to interpretation
- ▶ Then, would start to peak after
- ▶ Thus, I would take 2-4 weeks of peaking before a meet after overreaching to fully allow fatigue to dissipate

PROGRESSION OVER TIME FROM BLOCK TO BLOCK

- ▶ In general the undulation pattern decreases by 1 or 2 reps each
- ▶ RPE gradually increases
- ▶ But, as discussed an overreaching block will spike volume

PROGRESSION OVER TIME FROM BLOCK TO BLOCK: GENERAL TRANSITIONS

- ▶ 1. Intro Microcycle (1-2 Weeks)
- ▶ 2. Main Mesocycle (3-6 Weeks)
- ▶ 3. Taper and Test (Optional)
- ▶ 4. REPEAT

Modified Daily Undulating Periodization Model Produces Greater Performance Than a Traditional Configuration in Powerlifters

“...It is possible that even though DUP provides an overall setup for success, further integration of periodized designs (i.e. a DUP and autoregulation programming strategy into a block and linear yearly framework) may be appropriate to optimize results.”

Novel Resistance Training-Specific RPE Scale Measuring Repetitions in Reserve

“...The proposed model lends itself well for load alterations in integrated periodized configurations. Particularly, autoregulation can be useful within a model, which employs a daily undulating programming strategy, yet fits into the yearly structure of linear/block periodization.”

Furthering Autoregulation Strategies

- ▶ *1. Assign and Adjust Intra-Session Load*
 - ▶ RPE Scale
- ▶ *2. Progression*
 - ▶ RPE and APRE
- ▶ *3. To utilize a flexible template*
 - ▶ Possibly increase adherence
- ▶ *4. Autoregulate daily volume*
 - ▶ **RPE Stop or Fatigue Percentage**

RPE STOP: Autoregulating Volume

Helms et al. 2017

<u>Week of February 13th, 2017</u>	WEEK 1 (2-13-17)		
LIFT	SETS X REPS	WEIGHTS	RPE
SQUAT	Single @8RPE, X5 @72.5% of projected 1RM, STOP @8RPE, 3 max sets	225, 185	6, 7, 7
DEADLIFT	Double @8RPE, 2X2 @10kg less than double	240, 230	8
BENT OVER ROW	3X12 @6-8RPE	70	
BENCH	3X5	132.5	8
MILITARY PRESS	3X7 @6-8RPE	55	
SQUAT	Single @7-8RPE, X3 @77.5% of projected 1RM, STOP @8RPE, 4 max sets	222.5, 195	7, 7, 7, 7
BENT OVER ROW	4X10 @6-8RPE	80	
BENCH	Single @8RPE, 3X3 @140kg	160	8.5
CLOSE GRIP BENCH	3X4 @6-8RPE	110	
MILITARY PRESS	3X5 @5-7RPE	60	
SQUAT (Plus Set)	Single @8RPE, X2 @82.5% of projected 1RM, STOP @8RPE, 4 max sets	225, 205	8
DEADLIFT	Single @8RPE, 3X1 @10kg less than single	260, 250	9
BENCH	X2 @9RPE, 4X2 @85% of double	160, 135	8
CLOSE GRIP BENCH	4X2 @8-9RPE	120	
PULLUPS	X30		

1. Work up to load at prescribed RPE
2. Project daily 1RM
 - If 225kg is performed @8, that means 225 could have been done for 3 reps
 - So, $(225\text{kg} \times 0.0333 \times 3 \text{ Reps}) + 225 = 247.5$
- 3. Use projected 1RM to find volume: $247.5 \times (72.5\% \text{ or } 0.725) = 180\text{kg}$ (actually did 185...it's okay to alter slightly to meet block RPE goals)
- 4. 'STOP' at particular RPE

JUST ONE EXAMPLE...MANY WAYS TO DO THIS

RPE STOP

Helms et al. 2017

WEEK 2 (2-20-17)		
SETS X REPS	WEIGHTS	RPE
Single @8RPE, X4 @75% of projected 1RM, STOP @8RPE, 2 max sets		
Double @8RPE, 2X2 @10kg less than double		
3X12 @6-8RPE		
3X5	135	
3X7 @6-8RPE		
Single @7-8RPE, X3 @77.5% of projected 1RM, STOP @8RPE, 4 max sets		
4X10 @6-8RPE		
Single @8RPE, 3X3 @140kg		
3X4 @6-8RPE		
3X5 @5-7RPE		
Single @8RPE, X2 @82.5% of projected 1RM, STOP @8RPE, 4 max sets		
Single @7-8RPE, 3X1 @10kg less than single		
X1 @9RPE, 4X2 @85% of single		
4X2 @8-9RPE		
X30		

Note, the slight decline in volume and increase in intensity (in some cases) in accordance with the principles outlined earlier....**CONCEPTUALIZE / INTEGRATE**

Applications and Takeaways

- Hypertrophy and strength occur independent of repetition range
- Practically higher reps take longer
- Overreaching is sustainable for a short term, however overtraining is consistently decreased performance for a long period of time
- Autoregulate volume and focus on neuromuscular adaptations in the final weeks when peaking

FINAL THOUGHTS

Programming is a science, but it's far from an exact science. Everything we covered is based upon the data, but most is honestly up to interpretation and you must have practical experience to be able to implement the data appropriately. When looking at programming and periodization research you need to look beyond individual studies and understand that everything is *conceptual* and can be *integrated*.

Note For October:
My Son Beat Me Up...he's 22 months old
