

NSCA COACHES CONFERENCE

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N. CAROLINA

 **NSCA**[®]
NATIONAL STRENGTH AND
CONDITIONING ASSOCIATION



Conflict of Interest Statement

- **I have no actual or potential conflict of interest in relation to this presentation.**

What Works! Inspired by Science, Grounded in Reality

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PRINCIPLES & PROGRAMMING

- **Heavy and basic movements build quality size and strength. Size is a by-product of strength.**
- **Strength is the basis of all other bio motor qualities.**
- **Change something periodically but do not change too much, especially if it is working for you.**
- **“Everything works, but nothing works forever” Louie Simmons**

My Strength Training Philosophy

- **Exercise choice should be most bang for buck (free weight, compound movements) and programmed accordingly to the individuals' strengths and weaknesses (Heavy & Basic)**
- **Training time should be less than 75 mins, with appropriate rest periods and sufficient volume, this should be more than easily accomplished**
- **A strong foundation of strength should be built before trying to accomplish speed and power. Strength underpins all other physical components in the gym**
- **Unilateral movements should be included in any good program to identify and help correct weaknesses**

Philosophy cont.

- **Individualise to Prioritise to Optimise**
- **Movements NOT Muscles, Athletic NOT Aesthetic**
- **Different loading protocols for different movements for different individuals (any program should be adjusted for the individual, not the other way around)**
- **Technique should ALWAYS dictate the load used, not the opposite**

Philosophy cont.

- **Change the core movements and assistance exercises every 3 to 4 weeks to attain the best adaptations from the neural system. Use a variety of angles, bars, loading patterns, and equipment variations to sort out what best works for you and what transfers to your sport.**
- **Anything you do in the gym must crossover into your chosen sport/activity. Be specific with exercise selection and loading protocols. (explosive v non-explosive exercises)**
- **The ability to train is governed by the ability to recover, so less is often more. (Full Body versus Split Training)**

Questions & Quotes

- **What game do we play in the strength training facility? Joe Kenn**
- **Remember who you are training.**
- **Football is a game of movements, train movements not muscles. Joe Kenn/Vern Gambetta**
- **“Everything works, but nothing works forever” Louie Simmons**
- **“It’s all about the buy in you get from the players you have in the environment you help create” Damian Marsh**

Initial Focus

Movement Patterns

**Dan John 5 basic movement patterns
(loaded carries, squat, hinge, pull, push)**

Mobility drills

(Strength without mobility & flexibility can be a liability)

Level 1 – No discussion/I decide (0 degrees of Freedom)

Level 2 - Discussion/I decide (1 degree of freedom: exercise selection)

Level 3 – Discussion/We decide (2 degrees of freedom: + methodology)

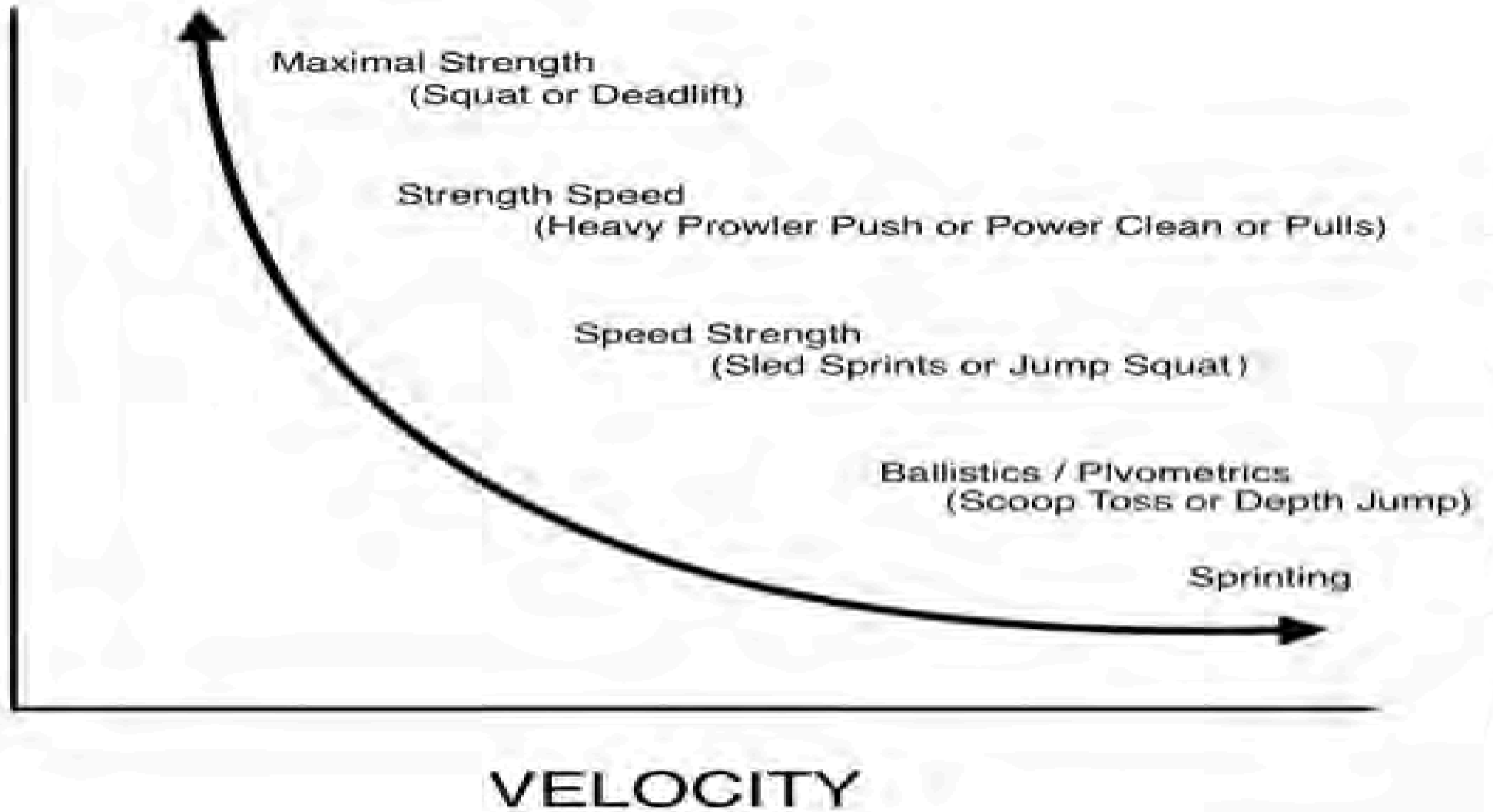
Level 4 – Available for discussion and guidance but the player decide (3 degrees of freedom: + Training Frequency)

THREE KEY AREAS

- **Faster (Neural, Speed & Power)**
 - **Fitter (Metabolic)**
- **Stronger (Neural, Mechanical)**



FORCE



VBT cont.

Average Bar Velocities	
Snatch-from floor	1.52 – 1.67 m/secs
Hang Snatch	1.35 – 1.96 m/secs
Power Clean	1.20 – 1.32 m/secs
Hang Clean	1.30 – 1.40 m/secs
Power Shrug	1.15 m/secs
Power Pull	1.38 m/secs
Speed-Strength	1.10 – 1.65 m/secs
Strength-Speed	0.80 – 1.00 m/secs
Absolute Strength	0.10 – 0.35 m/secs



Force Velocity Curve Programming

- **Speed** — 10 to 20 meter accelerations with good recovery between three and five reps or when timing slows, if using electronic timing lights.
- **Ballistics and/or Plyometrics** — Scoop toss with a medicine ball or depth jumps 3x3-5 reps.
- **Speed Strength** — Jump squats with empty Olympic bar up to 40% of 1RM back squat 3x3–5 reps.

Force Velocity Curve Programing cont.

- **Strength Speed** — Power Cleans with 75%, 3x3–5 reps or Snatch Pulls with 80%, 3x3–5 reps.
- **Maximal Strength** — Box Squat 3–5 sets x 3–5 reps with 80–90%.
- **Assistance Lower Body (Single Leg and Hamstrings/Glutes)** — Bulgarian Sprinter's Squat with or without a deficit option (superset with) single-leg hip thrusts 3–4 sets x 6–10 reps.

POWER METABOLIC CIRCUIT

Band Squat (5) into Double foot rapid rebound jumps (10)

Band Bench (5) into Rebound Push ups (5)

Block or Hang Clean (5) into MB Scoop Toss (5)

Hip Thrust (5) into KB Swing (10)

Power Runner (20) into Single Leg Bench Blasts (10)

One Arm Rotational Jammer (5) into One Arm MB Push Against wall

Loaded Carries/Strongman



Strongman

**1 – Trap Bar Overhead Walk/Tyre Flip/KB
Windmill**

**2 – Prowler Push/Hang Clean & Push Press with
Powerbag/Suitcase Deadlift**

**3 – Sled Drag/Walking Lunge with Power Bag
Overhead/Half Turkish Get Up**

4 – Farmer's Walk/Power Ropes/Plate Sit Up

LOADED CARRIES PROGRAMMING

LOADING PARAMETERS FOR LOADED CARRIES/SLED/PROWLER

GOAL	Minimum distance	Maximum distance	Ideal distance	Sets	Rest
Strength	10m	50m	30m	3-5	2-3 minutes
Hypertrophy	50m	80m	60m	3-5	90-120 sec.
Resistance	80m	110m	90m	3-4	75-90 sec.
Fat loss	60-90 seconds			4-6	1:1 ratio

For hypertrophy development a good option is to superset a loaded carry with a lifting exercise.

Strength Programming

Three (3) days per week off season

45 – 75 minutes each session

Mobility & Preparation/Stretch

Types of Sessions

- **Lower Body Push & Pull, Upper Body Push & Pull + Loaded Carry**
- **Lower Body Push & Pull, Upper Body Push & Pull**
- **Pull, Push & Squat**

PRILEPIN'S CHART

Load (% of 1RM)	Reps per Set	Optimal Total Reps	Range of Total Reps
55-65%	3-6	24	18-30
70-80%	3-6	18	12-24
80-90%	2-4	15	10-20
90+%	1-2	4	1-10

KEY CALCULATIONS FOR STRENGTH TRAINING

Estimated 1RM = Load x Reps x 0.0333 + Load

Eg: 120kg x 6 = 120 x 6 x 0.0333 + 120

= 23.976 + 120

= 143.976

INOL = Total Number of Reps @ %/100 - %

EG: 4 x 6 @ 75%

INOL = 24/25

= 0.96

INOL Guidelines for a Single Exercise

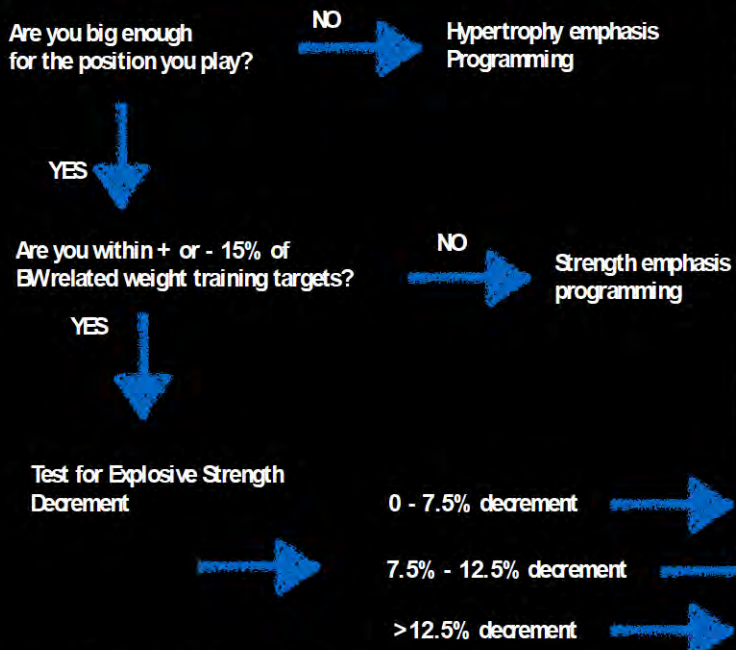
- **<0.4** **Too few reps, not enough stimulus?**
- **0.4 – 1.0** **Fresh, quite doable and optimal if not accumulating fatigue**
- **1.0 – 2.0** **Tough, but good for loading phases**
- **>2.0** **Brutal**

SPECIALITY BARS



Methods/Weeks	1	2	3	4
Strength Wave	2 x (6/5/4) @ (75%/80%/85%)	2 x (5/4/3) @ (80%/85%/90%)	2 x (4/3/2) @ (85%/90%/95%)	3 x (3/2/1) @ 90%/95%/97.5%+)
Size Wave	2 x (15/12/10)	2 x (12/10/8)	2 x (10/8/6)	2 x (8/6/4)
Size variation	10/8/6/15-20	8 x 8 @ 70%	4 x 6-12-25	6 x 6 @ 75%
RM loading	50 reps @ 10RM	30 reps @ 6RM	60 reps @ 12RM	40 reps @ 8RM
Clusters	4 x 3/3 @ 85-90%	4 x 2/2/2 @ 90-95%	4 x 3/2/1 @ 90+%	4 x 1/1/1/1/1/1 @ 95+%
Maximal Strength (1)	6 x 6 @ 75%	6 x 4 @ 85%	5 x 5 @ 80%	6 x 3 @ 90%
Maximal Strength (2)	3RM ramp @ 60 – 90%	5 x 2 @ 90%	3 x 3 @ 90%	5/4/3/2/1
Contrasts	1 rep @ 80%/6 reps @ 60%, 1 rep @ 85%/6 reps @ 65%, 1 rep @ 90%/6 reps @ 70%	5 x 5 @ 80% + upper or lower body plyometric as contrast for 5 reps	5/4/3/2/1 then 90% AMRAP, 80% AMRAP, 70% AMRAP	4 x 4 @ 85% + upper or lower body plyometric as contrast for 4 reps

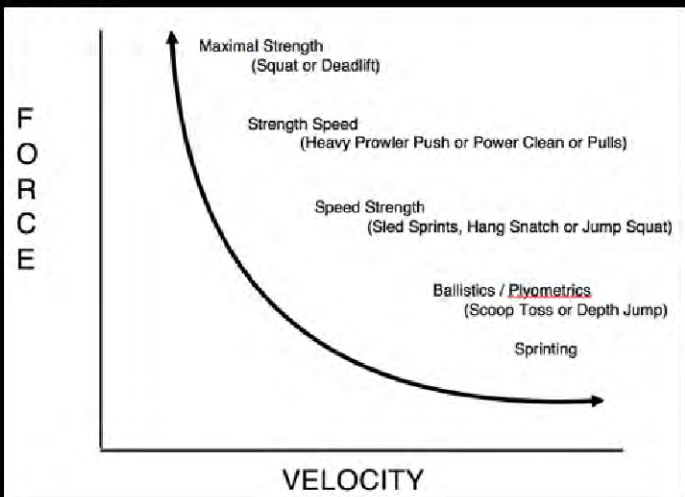
Flow Chart for Weight Room Programming



Velocity Programming - 80% of program in the bottom 2/3's of the FV curve, 20% in the top 1/3 of the FV curve

Balanced Programming - equal percentage of time in each 1/3 of the curve

Strength Programming - 80% of program in the top 2/3's of the FV curve, 20% in the bottom 1/3 of the FV curve



"The Chart"



% of 1RM

Strength Exercise Selection Chart

Bilateral	Unilateral	Hinge	Push	Pull	Core
Squat	Split Squat	Reverse Hyper	Strict Press	Pull Up	Turkish Get Up
Front Squat	Lunge	Romanian Deadlift	Bench Press	Bent Row	Windmill
Box Squat	Pistol Squat	Nordic	Incline Press	Prone Row	Suitcase Deadlift
Deadlift	Leg Press	Single Leg RDL	Landmine Press	SA Row	Full Body Twist
Trapbar Deadlift	Step Up	Barbell Thrust	Floor Press	Shrug	Rollouts

Programmable - Scalable - Recordable

- ### Exercise Targets
- Trap Bar Deadlift 2.5BW
 - Box Squat 2.5BW
 - Deadlift 2BW
 - Back Squat 2BW
 - Front Squat 1.75BW
 - Bench Press 1.1BW
 - Chin Up 1.5BW
 - Incline Bench Press 1.25BW
 - Power Clean 1.25BW
 - Jerk/ Push Press 1.25BW
 - Power Snatch BW
 - Military Press BW

1 RM	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%
60	57	54	51	48	45	42	39	36	33	30
65	62	59	55	52	49	46	42	39	36	33
70	67	63	60	56	53	49	46	42	39	35
75	71	68	64	60	56	53	49	45	41	38
80	76	72	68	64	60	56	52	48	44	40
85	81	77	72	68	64	60	55	51	47	43
90	86	81	77	72	68	63	59	54	50	45
95	90	86	81	76	71	67	62	57	52	48
100	95	90	85	80	75	70	65	60	55	50
105	100	95	89	84	79	74	68	63	58	53
110	105	99	94	88	83	77	72	66	61	55
115	109	104	98	92	86	81	75	69	63	58
120	114	108	102	96	90	84	78	72	66	60
125	119	113	106	100	94	88	81	75	69	63
130	124	117	111	104	98	91	85	78	72	65
135	128	122	115	108	101	95	88	81	74	68
140	133	126	119	112	105	98	91	84	77	70
145	138	131	123	116	109	102	94	87	80	73
150	143	135	128	120	113	105	98	90	83	75
155	147	140	132	124	116	109	101	93	85	78
160	152	144	136	128	120	112	104	96	88	80
165	157	149	140	132	124	116	107	99	91	83
170	162	153	145	136	128	119	111	102	94	85
175	166	158	149	140	131	123	114	105	96	88
180	171	162	153	144	135	126	117	108	99	90
185	176	167	157	148	139	130	120	111	102	93
190	181	171	162	152	143	133	124	114	105	95
195	185	176	166	156	146	137	127	117	107	98
200	190	180	170	160	150	140	130	120	110	100
205	195	185	174	164	154	144	133	123	113	103
210	200	189	179	168	158	147	137	126	116	105
215	204	194	183	172	161	151	140	129	119	108
220	209	198	187	176	165	154	143	132	121	110
225	214	203	191	180	169	158	146	135	124	113
230	219	207	196	184	173	161	150	138	127	115
235	223	212	200	188	176	165	153	141	129	118
240	228	216	204	192	180	168	156	144	132	120
245	233	221	208	196	184	172	159	147	135	123
250	238	225	213	200	188	175	163	150	138	125
255	242	230	217	204	191	179	166	153	140	128
260	247	234	221	208	195	182	169	156	143	130
265	252	239	225	212	199	186	172	159	146	133
270	257	243	230	216	203	189	176	162	148	135
275	261	248	234	220	206	192	179	165	151	138
280	266	252	238	224	210	196	182	168	154	140
285	271	257	242	228	214	200	185	171	157	143
290	276	261	247	232	218	203	189	174	160	145
295	280	266	251	236	221	207	192	177	162	148
300	285	270	255	240	225	210	195	180	165	150

Load-Velocity Relationship

Mean Velocity Range (M/s)	% 1RM	
0.93	1.03	60
0.86	0.95	65
0.78	0.86	70
0.71	0.79	75
0.65	0.71	80
0.57	0.63	85
0.49	0.55	90
0.43	0.47	95
0.29	0.32	100

Load (% of 1RM)	Reps per Set	Optimal Total Reps	Range of Total Reps
55-65%	3-6	24	18-30
70-80%	3-6	18	12-24
80-90%	2-4	15	10-20
90+ %	1-2	4	1-10

Variable	Training Goal				
	Strength	Power	Hypertrophy	Endurance	Speed
Load (% of 1RM)	90-80	60-45	80-60	60-40	30
Reps / Set	1-5	1-5	6-12	13-60	1-5
Sets / Exercise	4-7	3-5	4-8	2-4	3-5
Rest between sets (mins)	2-6	2-6	2-5	1-2	2-5
Duration (secs per set)	5-10	4-8	20-60	80-150	20-40
Speed / rep (% of max)	60-100	90-100	60-90	60-80	100
Training sessions / week	3-6	3-6	5-7	8-14	3-6

Table reproduced from Siff, 2003

FINAL THOUGHTS

- Are your preferential biases for a certain type of training getting in the way of making your players better SPORT players
- Are you training players to pass specific fitness tests or training them to be better SPORT players
- Irrespective of how fitter, faster, stronger you make your players you will be judged purely on the win/loss record of the team

