The Strength & Conditioning Laboratory

An Alternative Approach to Programming for Enhanced Performance and Injury Prevention

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New Orleans Saints

“Living hard was easy when was young and bullet proof”

—“Was It 26”
Chris Stapleton
### Personal Workout (circa 1979-1987)

<table>
<thead>
<tr>
<th>ORDER</th>
<th>EXERCISE</th>
<th>%</th>
<th>REPS</th>
<th>SETS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bench Press</td>
<td>Work to 150 lbs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>DB Bench Press</td>
<td>RM 10</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Close Grip Bench Press</td>
<td>RM 10</td>
<td>3</td>
<td>(1987 went to 20, 16, 12, 8)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Squat</td>
<td>RM 10</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Leg Extension</td>
<td>RM 4</td>
<td>Fall</td>
<td>3</td>
<td>Black pants lined in pant leg</td>
</tr>
<tr>
<td>6</td>
<td>Leg Curl</td>
<td>RM 5</td>
<td>Fall</td>
<td>3</td>
<td>Black pants lined in pant leg</td>
</tr>
<tr>
<td>7</td>
<td>Nairobi Double Shoulder</td>
<td>RM 5</td>
<td>Fall</td>
<td>2-3</td>
<td>Burn outs</td>
</tr>
<tr>
<td>8</td>
<td>Nairobi Double Chest</td>
<td>RM 5</td>
<td>Fall</td>
<td>2-3</td>
<td>Burn outs</td>
</tr>
<tr>
<td>9</td>
<td>Squat Super Pullover</td>
<td>RM 5</td>
<td>Fall</td>
<td>2-3</td>
<td>Burn outs</td>
</tr>
<tr>
<td>10</td>
<td>Lat Pulldown</td>
<td>RM 10</td>
<td>Fall</td>
<td>2-3</td>
<td>Burn outs</td>
</tr>
<tr>
<td>11A</td>
<td>Super Pullover</td>
<td>RM 8</td>
<td>Fall</td>
<td>2-3</td>
<td>Burn outs</td>
</tr>
<tr>
<td>11B</td>
<td>Dips and/or Triceps</td>
<td>RM 20</td>
<td>Fall</td>
<td>5</td>
<td>Minimum rest between sets</td>
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<tr>
<td>12</td>
<td>Reverse Curls</td>
<td>RM 75lbs</td>
<td>6</td>
<td>1-2</td>
<td>Stack plus weight pinned on- Burn outs</td>
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### Sample Workout circa 1993

<table>
<thead>
<tr>
<th>ORDER</th>
<th>EXERCISE</th>
<th>TEMPO</th>
<th>%</th>
<th>REPS</th>
<th>SETS</th>
<th>SERIES</th>
<th>NOTES</th>
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<tbody>
<tr>
<td>1</td>
<td>POWER SNATCH</td>
<td>10X</td>
<td>50-60</td>
<td>6</td>
<td>3</td>
<td>1</td>
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</tr>
<tr>
<td>2</td>
<td>POWER CLEAN</td>
<td></td>
<td>60-70</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td></td>
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<tr>
<td>3</td>
<td>BENCH PRESS</td>
<td>RM 10</td>
<td>8,5,3,1,1,1,1,5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>BACK SQUAT</td>
<td>RM 10</td>
<td>10</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>LEG CURL</td>
<td>RM 10</td>
<td>10-12</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6A</td>
<td>WIDE PULLDOWN</td>
<td>RM 10</td>
<td>10-12</td>
<td>3</td>
<td>1</td>
<td>TO CHEST</td>
<td></td>
</tr>
<tr>
<td>6B</td>
<td>BEHIND NECK PRESS</td>
<td>RM 10</td>
<td>10-12</td>
<td>3</td>
<td>1</td>
<td>ELBOWS OUT</td>
<td></td>
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<tr>
<td>7A</td>
<td>DIPS</td>
<td>RM 10</td>
<td>10-12</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>7B</td>
<td>BICEP CURL</td>
<td>RM 10</td>
<td>10-12</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7C</td>
<td>TORSO CURL</td>
<td>RM 10</td>
<td>10-12</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>7D</td>
<td>REV TORSO CURL</td>
<td>RM 10</td>
<td>10-12</td>
<td>3</td>
<td>1</td>
<td></td>
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</tbody>
</table>

OK now give me a minute........

(AKA things that dive me nuts)
“If you only do what you do, you will never do what you’ve never done.”

Specificity (or really over specificity)

- Trying to mimic only the movements commonly used in sport/position
- Planning energy system work only based on specific game needs
- Replacing all agility work with position drill inspired training

• COMPLETE AND UTTER DISREGARD FOR THE GENERAL PREPERATION PHASE OF PERIODIZED TRAINING PROGRAMS

“Falling feels like flying ’til you hit the ground”

“Parachute”
Chris Stapleton
“Function Training” (I guess as opposed to non-functional training - is this even possible?)

- I don’t disagree with many of the ideas I just really hate the term.
- In many ways go’s hand in hand with to my issues with over-specificity.
- What ever happened to just lifting heavy weights as explosively as possible?
- Some stuff just wasn’t made to be done on a Boso or Stability Ball. Its just silly.

“You only need a roof when it’s raining.... You only need a fire when its cold”

- Parachute
  Chris Stapleton

“Freaking out about movement screen results and or training only correctives and or trying to fix everything” (Workouts that aren’t really WORK outs)

- Some compensations help performance
- If its not broken why fix it?
The worst phrase in the English language…. 

“ I cant squat” 
or “I don’t do squats” 
or “The doctor/ trainer said not to do squats” 

And now back to the previously scheduled presentation………

A Different Paradigm for Designing Training Programs

• Background Assessment
  — Sport, Position, Injury History, Individual Structure
• Active Assessment (on going)
  — More than a periodic movement screen
  — Use systematic constantly varying exercise prescription to identify movement dysfunctions
• Balance Attainment-Activation
  — Correct Compensations/ Develop Appropriate Movement Patterns
  — “Wake up” Inhibited Muscles
  — Lengthen Short Muscles/ Strengthen and Shorten Long Muscles
• Skill Enhancement-Integration
  — Train the non-compensated/unbalanced body for improved performance
  — Train to translate the work done in the training program to the athletic field/ “Real Life” situation
“Have a plan, work the plan and plan for the unexpected”

— Terry Hoeppner

Major Objectives of Athletic Performance Enhancement Program

– Improve quality and efficiency of movement
– Identify and correct compensation patterns and dysfunction that limit optimal performance and/or contribute to injury
– Promote structural balance
– Increase work capacity

ASSESSMENT
"The Body Becomes It's Function"

When faced with a demand the human body will “find a way” to adapt to the stimulus- “GET 'ER DONE!”

Unfortunately often this will result in compensation, rather than truly efficient movement.

Injuries over a lifetime can and more than often will contribute to this process.

THE LINK BETWEEN CORE JOINT STABILITY, PERFORMANCE AND INJURY PREVENTION

- Every joint in the body has a group of small core muscles. If those muscles are not strong, that joint will be unstable.
- When small core muscles are weak, the brain will select larger muscles to do their job and the small core muscles will be forgotten.
- It will take specific, rotational exercises to wake up those muscles to get them working again. When they are awakened, the body will be able to move freely and powerfully once again.
- If a joint is unstable, the nervous system will not let the large muscles (which move the joint) operate at their greatest strength of effectiveness.

ELEMENTS OF PERFECT POSTURE

These points should align from the Side:
- Hole of the ear
- Middle of the shoulder
- Middle top of the pelvis
- Middle of the knee
- Front of the outside ankle bone

These points should align from the Front:
- A point directly between
  - The small indentation at the top of the breast bone
  - The navel
  - The pubic bone
  - An imaginary point directly between the feet

These points should align from the Rear:
- The middle of the back of the head
- A line directly up the spine and between the shoulder blades
- The division of the buttocks
- An imaginary point directly between the feet
Most Common Athletic Body Compensations

- Quads are short and hamstrings are long and weak.
- Lower back muscles are short and your middle abdominal muscle is long and weak.
- Muscles that rotate hips outward are short and ones that rotate them inward are long and weak.
- Small, important muscles around the spine will be long and weak.
- The abdominal oblique system will be imbalanced. The outermost oblique will be short.
- Consequently, the innermost oblique, along with an incredibly important muscle called the transverse abdominis, will be long and weak.
  (The combination of these two muscle imbalances will leave the spine virtually unprotected and will create an environment for muscle atrophy and weakness, disc and spinal ligament injuries, and nerve damage.)
Balance Attainment/Activation

CORE vs. Core

• All joints have a core group of muscles. If these core muscles are weak, the joint will be unstable, performance will suffer, and athletes will be at risk of injury.
• All cores are made up of a group of muscles that stabilize and protect the joints during movement.
• The spine is a series of joints and has a specialized group of core muscles.
• Core muscles that surround the hips, shoulders and trunk are dedicated to stabilizing movement in the body, but they also have the dual role as rotators which both start and stop powerful rotation.

VIRTUALLY ALL JOINT INJURIES ARE THE RESULT OF A JOINTS INABILITY TO CONTROL ROTATION!

• The body basically moves in two ways: It either rotates around one pivot point (rotation), or parts of it move in the same direction along a straight line (translation).
• There are three directions of movement for the body. It can move frontward or backward, side-to-side, or around in a circle.
• There are three “planes of movement” named X, Y, or Z
• Understanding which muscles act on the various planes makes it possible to know how to build a perfect posture.
• There are five major centers of movement that rotate in nearly a complete circle—the hips, shoulders, ankles, wrists, and neck. The muscles that surround these areas are usually classified as small stabilizers, but they provide both the power and stopping action for rotation.
• Most postural and injury problems begin in, and around, the hips, ankles, and shoulders.
• Core and rotator strength corresponds with muscles that surround spine, hips and shoulders, and are essential to conditioning for outstanding athletic performance and injury prevention.
**PLANES OF MOVEMENT**

- X is the horizontal line on the chart
- Y is the vertical line
- Z is the axis that cannot be found on the graph paper because it goes through the chart (imagine holding the graph paper up in front of you and poking a pencil straight through it – that is the Z axis)

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**The Hips are the Key!**

- Hip dysfunction (limited mobility) most often caused by modern life (AKA sitting) is a key factor in limited performance and or injury.
- No coincidence that so many athletes that suffer knee issue so often also exhibit lumbar spine dysfunction, core muscle injury and or hamstring problems.

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**INTERNAL ROTATORS OF THE HIP**

- Posterior View
- Anterior View
Two Fundamental Movements

Squat (deep knee bend)
- Basis for almost all sports specific movements

Hip Hinge
- Key to safe, efficient and effective posterior chain work

Methods of Evaluation

What we looking for?

Performance
- Triple Extension
- Hip Mobility and Strength
- Ankle Mobility and Strength
- Ability to perform a variety of movement patterns with control, power and speed
- Ability to generate maximum force and speed

Injury Risk Management
- Lumbar/ Torso Stabilization and Control
- Hip Mobility and Strength
- Ankle Mobility and Strength
- Shoulder Mobility and Strength
- Pelvic Orientation
- Ability to perform a variety of movement patterns with control, power and speed
How do we find it?

- Constantly vary exercise selection
  - Each exercise requires different levels of motor control coming in differing combinations of muscles. Slight variations in exercise may recruit different motor units.
  - Take note of how exercises effect performance on benchmarks and real world performance.

Exercise Progressions - Regressions

**POWER CLEAN**
- All can be done with Barbell with Dumbbells for further regression
  - Clean Pull / Hang (Mid Thigh) flat feet
  - Clean Pull / Hang (Above Knee) flat feet
  - Clean Pull / Hang (Below Knee) flat feet
  - Clean Pull / Hang (Mid Thigh) jump
  - Clean Pull / Hang (Above Knee) jump
  - Clean Pull / Hang (Below Knee) jump
  - Hang Clean (Mid Thigh) jump
  - Hang Clean (Above Knee) jump
  - Hang Clean (Below Knee) jump
  - Clean Pull / Floor
  - Power Clean
  - Power Clean progress with weight or speed

**SQUAT**
- Body Weight Squat (Deep knee bends)
- Barbell Barbell Front Squat
- Barbell Belt Squat
- Barbell Harness Squat
- Goblet Hold or Double KB/DB Front Squat
- Reverse Safety Squat Bar Front Squat
- Stability Box Squat (chains and band supported KB/DBs)
- Box Squat
- Barbell Row Squat
- Barbell Back Squat
- Barbell Back Squat progress with weight, speed or technique modification (exercises...
- Back Squat
- 1/1/4 KB/DBs)

Exercise Progressions - Regressions

**Horizontal Pulls**
- Machine Row
- Supported DB/KB/SS Row
- Supported Barbell Row
- Unsupported or Stance DB/KB/SS Row
- Unsupported or Stance Barbell Row
- Barbell Body Weight Row (very body position from incline to decline to increase difficulty)
- TRX / Ring Body Weight Row (very body position from incline to decline OR vary load or vary tempo to increase difficulty)

**Vertical Pulls**
- Half Kneeling Single Arm Lat. Pulldown
- Tall Kneeling Lat. Pulldown
- Assisted Chin Up (to cheat)
- Semi-Assisted Chin Up (to cheat)
- Chin Up (to cheat)
- Very Grips from close pull up to wide to increase difficulty OR:
  - Increase Load Chin / Pull Up OR
- Manipulate strength curve through tempo changes
Exercise Progressions - Regressions

Horizontal Push
- Barbell Push Ups
- DB Flat Bench Press
- Push Ups
- Unstable Push Ups (BOSU, Stability Ball, TRX)
- Stability Bench Press (chains and band supported KB/DBs)
- Weighted or Resisted Push Ups (Smith machine, weighted vest, Pitshark or Bands)
- Barbell Bench Press
- Dips (assisted to resisted progression)
- Barbell Bench Press (multiple angles multiple grips)
- Progress with weight, speed or technique modification (example bottom up or 1/1/4 reps)

Vertical Push
- Shoulder Lateral Raise (double or single arm)
- Machine Shoulder Press (double or single arm)
- Cable Shoulder Press (double or single arm)
- DB/KB Shoulder Press (double or single arm)
- Barbell Shoulder Press
- DB/KB or FJ Push Press (wall balls)
- Handstand Push Ups
- Unstable Push Ups (BOSO, Stability Ball, TRX)
- Stability Bench Press (chains and band supported KB/DBs)
- Weighted or Resisted Push Ups (Smith machine, weighted vest, Pitshark or Bands)

Single Leg Squat Related
- Split Squat (Body Weight or Assisted)
- Split Squat (DB/KB)
- Split Squat (Barbell)
- Split Squat (Slide or SIMA Board)
- All of Above Unbalanced Load
- Split Squat Rear Foot Elevated
  - Split Squat (Rear Foot Elevated and Unresisted) weight progress to weight
  - Split Squat (Rear Foot Elevated and Unresisted) Body Weight Progress to Weighted
  - Split Squat (Rear Foot Elevated and Unresisted) Body Weight Progress to weighted
  - Progress with load/increased instability or speed

ALL CAN BE DONE IN MULTIPLE PLANES
**Exercise Progressions - Regressions**

**Step Up**
- Arrow Head Elevated Single Leg Squat (Body Weight or Assisted)
- Front Elevated Single Leg Squat (WB/MI)
- Body Weight Front Step-Up (Body) aka Lunges
- Barbell
- Body Weight Low Box Step-Up
- Loaded Low Box Step-Up
- All of above can be done with Unbalanced Load
- Increase Box Height to Progress
- Loaded High Box Step-Up (KB/DF) aka "Trampoline"
- Back/Load Step-Up
- Unbalanced Load Step-Up
- Unstable Load Step-Up
- Program with load increased instability or speed
- ALL EXERCISES IN MULTIPLE PLANES

**Set/Rep/Intensity Guidelines**

<table>
<thead>
<tr>
<th>GOAL</th>
<th>REPS</th>
<th>SETS</th>
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<th>TEMPO</th>
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<tbody>
<tr>
<td>Endurance</td>
<td>12+</td>
<td>1-3</td>
<td>&lt;70%</td>
<td>Slow</td>
</tr>
<tr>
<td>Hypertrophy</td>
<td>7-12</td>
<td>3-6</td>
<td>70-80%</td>
<td>Slow</td>
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<tr>
<td>Basic</td>
<td>4-6</td>
<td>3-5</td>
<td>80-90%</td>
<td>Slow to Moderate</td>
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<tr>
<td>Strength Peak</td>
<td>1-3</td>
<td>3-6</td>
<td>&gt;90%</td>
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<tr>
<td>Strength Peak Power</td>
<td>1-3</td>
<td>3-10</td>
<td>&lt;60%</td>
<td>Explosive</td>
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**Sample Workout 2016**

[Workout details]

[Workout details]