

**Building A Bigger Engine:
A Step by Step Guide
Developing Speed, Power
& Injury Free Development**

John Dagata
University of Oklahoma



Energy Systems

Speed & Power Events

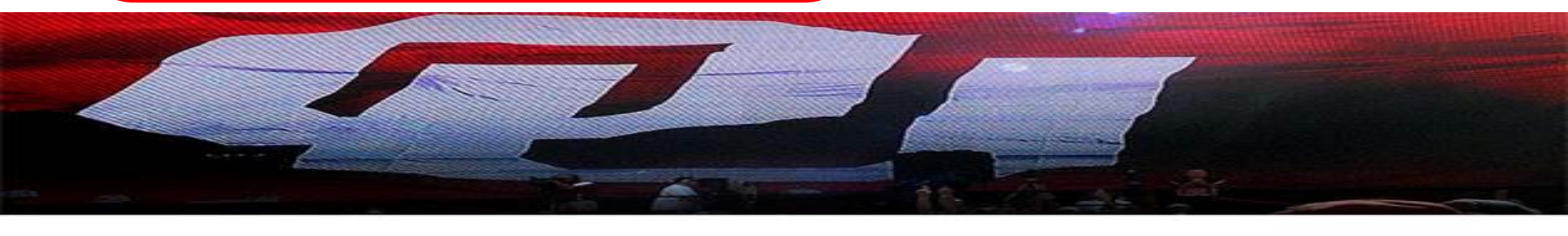
Sprint, Jumps, Throws



- Anaerobic Phosphate (ATP-CP): 0-10sec
- Anaerobic Lactate (Glycolytic): 10-60sec
- Aerobic Energy System: 60sec.- ?

Note: Proper Recovery of ATP & CP:

- A. 30 Seconds-50%
- B. 1 Minute-75%
- C. 90 Seconds-80%
- D. 3 Minutes-98%



Balancing The Energy Systems

- Percentages and Ratios of Energy Systems are defined by Performance!
- Neural Development: Approach the training of athletes from the rate of impact it has on the nervous system. (CNS-PNS)
- All Three Energy Systems will be Used.
- How Much, When, & Where? You're the Artist!



The Importance of Order and Exercise Prescription

Optimal
Improvement

Possible
Injury

Warm-Up

Event

Special
Strength

Maximal
Strength



Constructing Your Canvas

- **Annual Plan:** Off Season, Summer, Fall, Indoor, & Outdoor



Amy Haapanen- Annual Plan 20011-2012

| <u>CYCLE #</u> | <u>DATES</u> | <u>WEEKS</u> <u>Per-Cycle</u> | <u>WEEK THEME</u> | <u>CYCLE</u> <u>THEME</u> | <u>COMPS.</u> |
|-----------------------|--|--|---|--------------------------------------|----------------------|
| CYCLE II | 26/10/09- 22/11/09 | 4 | 1: Maximal Strength 2: Special Strength 3: Maximal Strength 4: Max-Combo Stre. | Special Preparation | |
| CYCLE III | 23/11/09- 20/11/09 | 4 | 1: Maximal Strength 2: Special Strength 3: Maximal Strength 4: Max-Combo Stre. | Spec. Prep. I Throws Spec. | |
| CYCLE IV | 04/01/10- 31/01/10 | 4 | 1: Maximal Strength 2: Special Strength 3: Maximal Strength 4: Max-Combo Stre. | Spec. Prep. II Throws Spec. | |
| CYCLE V | 01/02/10- 28/02/10 | 4 | 1: Maximal Strength 2: Special Strength 3: Max-Combo Stre. | Pre. Comp. I Throws Spec. | |
| CYCLE VI | 01/03/10- 28/03/10 | 4 | 1: Maximal Strength 2: Special Strength 3: Maximal Strength 4: Max-Combo Stre | Pre. Comp. II Throws Spec. | |
| CYCLE VII | 29/03/10- 25/04/10 Cal Track & Field | 4 | 1: Maximal Strength 2: Special Strength 3: Maximal Strength 4: Max-Combo Stre | Comp. I Throws Spec. | |

Constructing Your Canvas

- **Annual Plan:** Off Season, Summer, Fall, Indoor, & Outdoor
- **Cycle Theme:** General Preparation, Special Preparation, Pre-Competition, & Competition



Amy Haapanen- Annual Plan 2011-2012

| <u>CYCLE #</u> | <u>DATES</u> | <u>WEEKS</u> <u>Per-Cycle</u> | <u>WEEK THEME</u> | <u>CYCLE</u> <u>THEME</u> | <u>COMPS.</u> |
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Constructing Your Canvas

- **Annual Plan:** Off Season, Summer, Fall, Indoor, & Outdoor
- **Cycle Theme:** General Preparation, Special Preparation, Pre-Competition, & Competition
- **Weekly Theme:** Maximal Strength, Special Strength, Combo Max-Strength



Amy Haapanen- Annual Plan 2011-2012

| <u>CYCLE #</u> | <u>DATES</u> | <u>WEEKS</u> <i>Per-Cycle</i> | <u>WEEK THEME</u> | <u>CYCLE</u> <i>THEME</i> | <u>COMPS.</u> |
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Constructing Your Canvas

- **Annual Plan:** Off Season, Summer, Fall, Indoor, & Outdoor
- **Cycle Theme:** General Preparation, Special Preparation, Pre-Competition, & Competition
- **Weekly Theme:** Maximal Strength, Special Strength, Combo Max-Strength
- **Daily Theme:** Power, Olympic, Or Recovery



Amy Haapanen: Training Plans (Comp II:Throws-Performance.)

Theme: Max-Strength

Cycle #: C-VIII

Date: 05/03/12-05/30/12

Power Recovery Olympic Recovery Power Olympic

| Mon | Tu | Wed | Thur | Fri | Sat |
|---|---|---|---|---|---|
| Hammer: A.M.: 12lb P.M.: 4k,3k | Hammer: A.M.: 12lb P.M.: 4k,3k | Hammer: A.M.: 12lb P.M.: 4k,3k | Hammer: A.M.: 12lb P.M.: 4k,3k | Hammer: A.M.: 12lb P.M.: 4k,3k | Hammer: A.M.: 12lb P.M.: 4k,3k |
| <u>MJ</u> Rudiment 30m x 1 | <u>GSC</u> Pedestal 1x8 | <u>Speed</u> 2x20 1x40 2x30 1x50 | <u>GSC</u> Pedestal 1x8 | <u>MJ</u> x 2 Box x 3 Hurdle x 3 | <u>Speed: B.U.</u> 1x50 1x60 1x70 |

What is
Special
Strength?

Special
Strength

| | | | | | |
|--|---|--|---|--|--|
| <p>Jumps Squats</p> <p>1x6x81% 1x4x83% 1x2x85% 1x1x87%</p> <p>Pull-Ups (Continuous)</p> <p>1x6x81% 1x4x83% 1x2x85% 1x1x87%</p> <p>Multi Throw</p> <p>OH Throw 4k X 6-8</p> | <p>ASC</p> <p>Throws Spec 2x6</p> <p>Ows ½ Set</p> <p>Short Strength</p> <p>Med-Ball</p> <p>Twisting I 1 x 8</p> | <p>Snatch Pull</p> <p>4x2x85%</p> <p>Hang Snatch</p> <p>2x2x85% 2x2x87%</p> <p>DB Jerk</p> <p>2x3x85% 2x3x87%</p> | <p>ASC</p> <p>Throws Spec 2x6</p> <p>Ows ½ Set</p> <p>Short Strength</p> <p>Med-Ball</p> <p>Twisting I 1 x 8</p> | <p>Jump Squats</p> <p>1x6x81% 1x4x83% 1x2x85% 1x1x87%</p> <p>Pull-Ups (Continuous)</p> <p>1x6x81% 1x4x83% 1x2x85% 1x1x87%</p> <p>Multi Throw</p> <p>FH Throw X 6-8</p> | <p>Snatch Pull</p> <p>4x2x85%</p> <p>Hang Snatch</p> <p>2x2x85% 2x2x87%</p> <p>DB Jerk</p> <p>2x3x85% 2x3x87%</p> |
|--|---|--|---|--|--|



Special Strength

(Exercises Specifically Intended for Performance)

- **Multiple Jumps:** Jump Circuits (Series of 6-8 exercises with jumping at low amplitude), Box Jumps (5 Boxes Arranged in Ascending Order), Hurdle Hops (Continuously Jumping Over 5 Hurdles & Focusing on Low Ground Contact Times of 0.2 Seconds)
- **Sprints:** Maximum Velocity efforts at Ranges of 10m-50m (Speed Acceleration), 50m-120m (Speed Development), 80m-150m (Speed Endurance) & Velocity in a Global Sense (Backwards, Sideways)
- **Multiple Throws:** These can be done with a shot Putt, a kettlebell, a powerball, a medicine ball or a weightlifting plate.
- **General Strength Circuits:** A series of 8-10 exercises using body weight as resistance.

How
Much
And
When?



| Exercises | The result for of sportsmen of various sport grading | | | | | |
|-----------------|--|---------|---------|---------|---------|---------|
| | 45-50 m | 50-55 m | 55-60 m | 60-65 m | 65-70 m | 70-75 m |
| Hammer 3 kg | 53-58 | 58-63 | 63-68 | 68-73 | 73-78 | 78-82 |
| Hammer 5 kg | 36-41 | 41-46 | 46-51 | 51-56 | 56-61 | 61-66 |
| Hammer 6 kg | 31-36 | 36-41 | 41-46 | 46-51 | 51-56 | 56-61 |
| Hammer 7.260 kg | | | | 38-44 | 44-48 | 48-52 |
| Snatch (kg) | 50 | 55 | 65 | 75 | 80 | 85 |
| Clean (kg) | 65 | 70 | 80 | 90 | 100 | 110 |
| Twist (kg) | 10 | 15 | 20 | 25 | 30 | 35 |
| Half squat (kg) | 100 | 120 | 130 | 140 | 160 | 170 |
| Long jump (m) | 230 | 240 | 250 | 270 | 270 | 270 |
| Triple jump (m) | 710 | 740 | 780 | 820 | 820 | 820 |
| Up jump (m) | 60 | 65 | 65 | 65 | 70 | 75 |
| 30 m b/s (sec) | 4.8 | 4.8 | 4.6 | 4.6 | 4.5 | 4.5 |

Sports results, coefficients correlations

| Exercises | Sports results, coefficients correlations | | | | | |
|--------------------|---|------------|------------|------------|------------|------------|
| | 45- 50m | 50- 55m | 55- 60m | 60- 65m | 65- 70m | 70- 75m |
| Hammer 3 kg | 0.876 | 0.788 | 0.724 | 0.710 | 0.690 | 0.650 |
| Hammer 5 kg | 0.742 | 0.712 | 0.825 | 0.860 | 0.880 | 0.920 |
| Hammer 6 kg | 0.654 | 0.698 | 0.876 | 0.820 | 0.900 | 0.950 |
| Hammer 7.260 kg | - | - | - | 0.760 | 0.810 | 0.876 |
| Snatch | 0.578 | 0.670 | 0.590 | 0.440 | 0.430 | 0.460 |
| Clean | 0.625 | 0.560 | 0.542 | 0.510 | 0.496 | 0.512 |
| Squat | 0.560 | 0.602 | 0.524 | 0.500 | 0.480 | 0.340 |
| Long jump | 0.425 | 0.396 | 0.256 | 0.230 | 0.298 | 0.326 |
| Triple jump | 0.245 | 0.196 | 0.224 | 0.270 | 0.210 | 0.270 |
| Up jump | 0.520 | 0.426 | 0.368 | 0.320 | 0.290 | 0.324 |
| Shot put forwards | 0.345 | 0.276 | 0.212 | 0.276 | 0.324 | 0.280 |
| Shot put backwards | 0.504 | 0.425 | 0.478 | 0.460 | 0.350 | 0.320 |
| 30 m b/s | 0.250 | 0.186 | 0.240 | 0.200 | 0.220 | 0.186 |



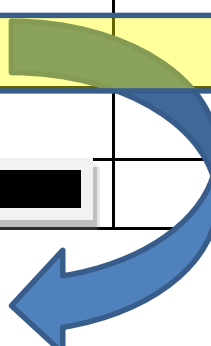
AMY HAAPANEN

TRAINING PARAMETERS 2011-2012

Primary Event: **HAMMER (65-70m)**

| <i>Exercise</i> | <i>Target</i> | <i>ST</i> | <i>II</i> | <i>III</i> | <i>IV</i> | <i>V</i> | <i>VI</i> | <i>VII</i> | <i>VIII</i> | <i>IX</i> | <i>X</i> | <i>XI</i> |
|--------------------|---------------|-----------|-----------|------------|-----------|----------|-----------|------------|-------------|-----------|----------|-----------|
| <i>Twisting</i> | <i>TP</i> | | ■ | ■ | | ■ | ■ | ■ | | | | |
| <i>Long Jump</i> | <i>2.75m</i> | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| <i>15m Sprint</i> | <i>TP</i> | ■ | ■ | ■ | ■ | ■ | | | ■ | | ■ | |
| <i>30m Sprint</i> | <i>4.20s</i> | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| <i>45m Sprint</i> | <i>TP</i> | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| <i>60m Sprint</i> | <i>TP</i> | | | | | | | ■ | ■ | ■ | ■ | ■ |
| <i>Back Heave</i> | <i>18.00m</i> | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| <i>Front Heave</i> | <i>16.50m</i> | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| <i>Body Weight</i> | <i>85k</i> | ■ | | | | | ■ | | | ■ | | |

Researched Variables



Amy Haapanen: Training Plans (Comp II:Throws-Performance.)

Theme: Max-Strength

Cycle #: C-VIII

Date: 05/03/12-05/30/12

| Mon | Tu | Wed | Thur | Fri | Sat |
|-----|----|-----|------|-----|-----|
|-----|----|-----|------|-----|-----|

| | | | | | |
|---|---|---|---|---|---|
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|---|---|---|---|---|---|

| | | | | | |
|----------------------------------|-------------------------------|--|-------------------------------|--|---|
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|----------------------------------|-------------------------------|--|-------------------------------|--|---|

| | | | | | |
|--|---|---|---|---|---|
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|--|---|---|---|---|---|

What is
Maximal
Strength?

Throws

Special
Strength

Maximum
Strength



Maximal Strength (Weightlifting)

- *Power Lifting:* Full Squat (Front & Back) , Jump Squat, Bench Press, Incline Press, Military Press, etc.
- *Olympic Lifting:* Cleans (From the Floor & Hang) , Snatch (From The Floor & Hang) , Jerks (Front & Back) , etc.
- *Ancillary Strength Circuits:* A series of 8-10 exercises with weights

When Is
Strong,
Strong
Enough?



| Exercises | The result for of sportsmen of various sport grading | | | | | |
|-----------------|--|---------|---------|---------|---------|---------|
| | 45-50 m | 50-55 m | 55-60 m | 60-65 m | 65-70 m | 70-75 m |
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| Long jump (m) | 230 | 240 | 250 | 270 | 270 | 270 |
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| Up jump (m) | 60 | 65 | 65 | 65 | 70 | 75 |
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| 30 m b/s | 0.250 | 0.186 | 0.240 | 0.200 | 0.220 | 0.186 |



Primary Event: **HAMMER (65-70m)**

| Exercise | Target | ST | II | III | IV | V | VI | VII | VIII | IX | X | XI |
|---------------|--------|----|----|-----|----|---|----|-----|------|----|---|----|
| Snatch | 80k | | | ■ | ■ | | ■ | | | | | |
| Hang Snatch | 70k | | | | | | | | ■ | | ■ | |
| Clean | 115k | | ■ | | | ■ | | | | | | |
| Hang Clean | 105k | | | | | | | ■ | | ■ | | ■ |
| BN Jerk | 100k | | ■ | | ■ | | ■ | | ■ | | ■ | |
| FN Jerk | 80k | | | ■ | | ■ | | ■ | | ■ | | ■ |
| Bench | 80k | ■ | | | | | | | | | | |
| DB Bench | 50k | | | | | | | | | | | |
| Incline Bench | 70k | | | | ■ | | | | | | | |
| DB Inc. Bench | 40k | ■ | | | | | | | | | | |
| Pull Up | 6FBW | ■ | ■ | | | | | | ■ | | ■ | |
| Back Squat | 150k | ■ | ■ | | ■ | | | ■ | | | | |
| Front Squat | 100k | | | ■ | | | ■ | | | | | |
| ½ Squat | 180k | | | | | | | | | | ■ | |
| Jump Squat | 90k | | | | | | | | ■ | | | |
| Step-Ups | 80k | ■ | ■ | | | ■ | | | | ■ | | ■ |

Research Variables

Amy Haapanen: Training Plans (Comp II:Throws-Performance.)

Theme: Max-Strength

Cycle #: C-VIII

Date: 05/03/12-05/30/12

Special
Strength

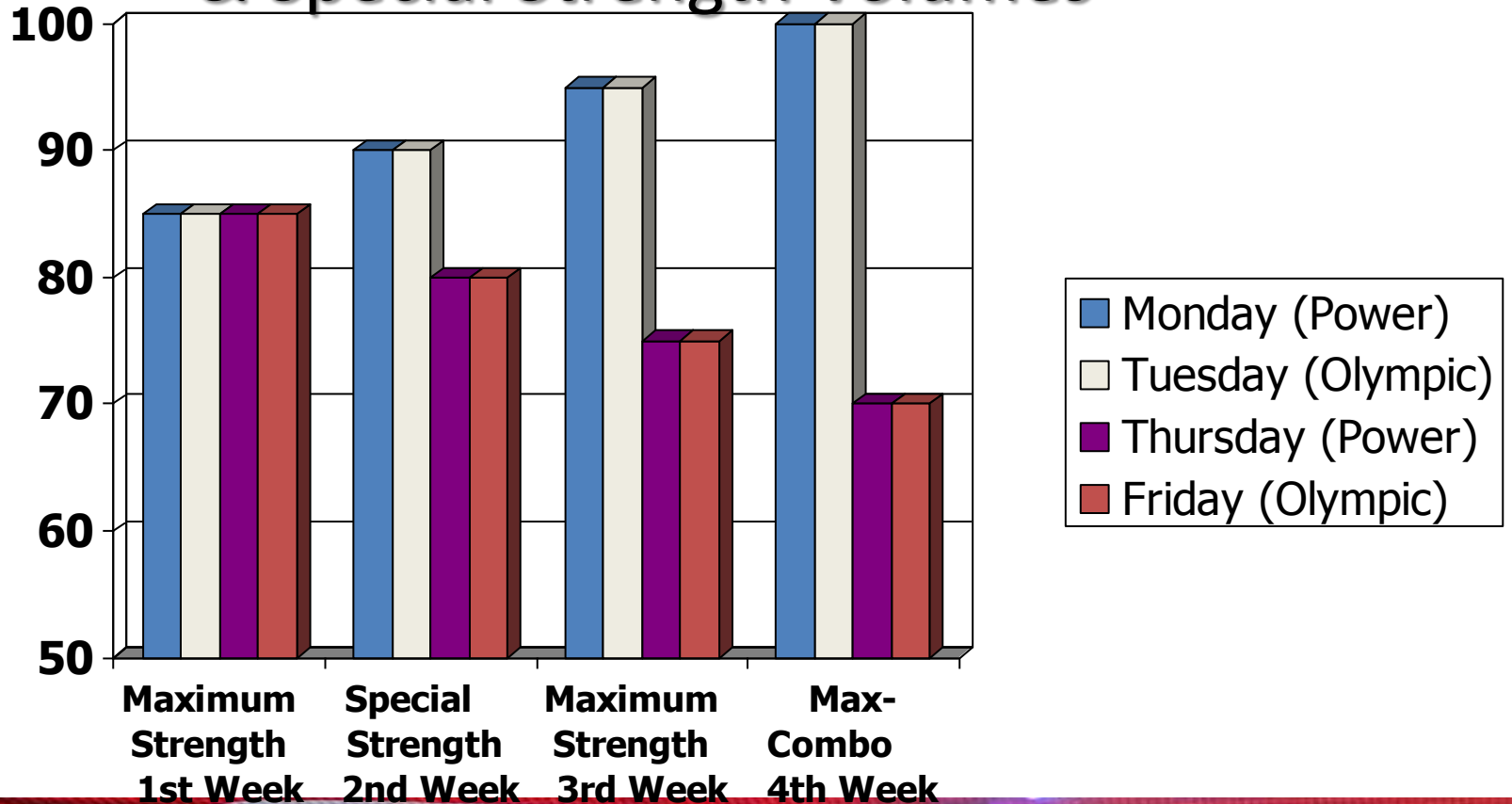
Maximum
Strength

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| Neural | Recovery | Neural | Recovery | Neural | Neural |



Notes: As Percentages Increase, The Volume will Decrease:
As Percentages Decrease, The Volume will Increase:

Balancing Maximal Strength & Special Strength Volumes



Questions?

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