

**STRENGTH
TRAINING FOR THE
HIGH SCHOOL
TRACK AND FIELD
ATHLETE**

**By Carrie Lane,
Assistant Track and
Field Coach**

**WYOMING
ATHLETICS**



WHAT IS THE AGENDA OF THE TALK?

1. The case for speed/power early in development
2. Using strength training to enhance your coaching points
3. Using strength training to accelerate recovery and provide balance to your training
4. Organizing strength training within your training plan
5. Addressing logistical issues of strength training



MY PERSPECTIVE

College throws coach →
USTFCCCA S and C
course instructor →
Speed/power coach for
high school and
professional track and
field athletes →
College throws coach



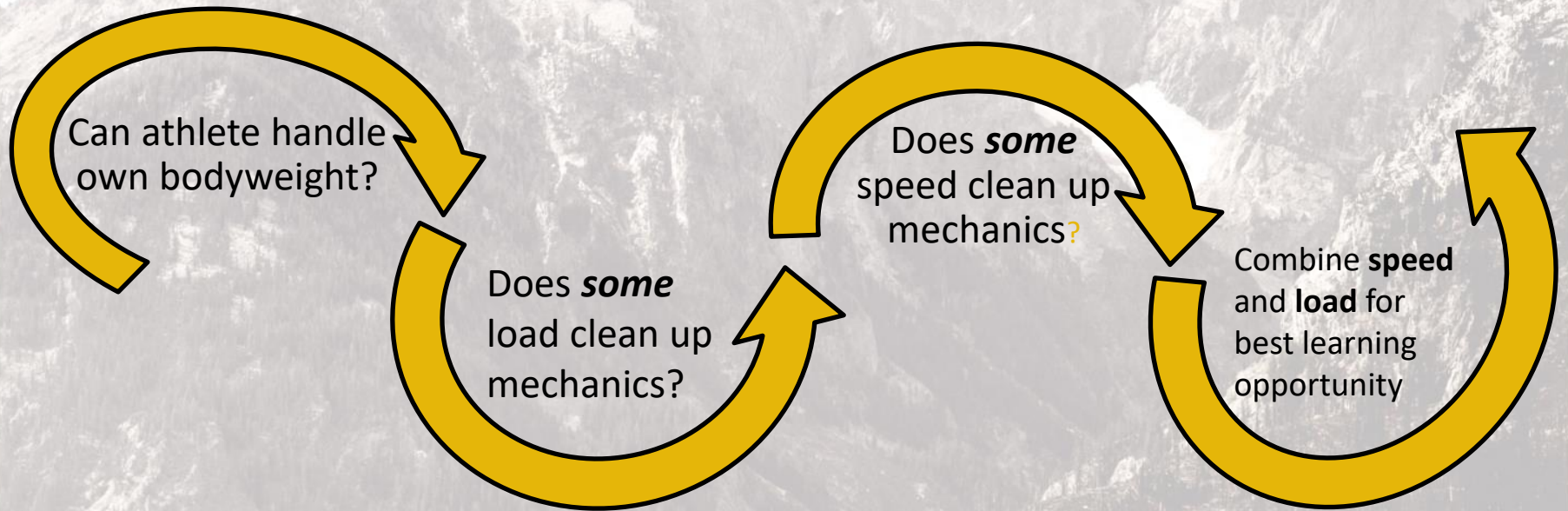
“STRENGTH TRAINING” = “SPEED/POWER/STRENGTH” TRAINING



“Strength Training” INCLUDES hurdle mobility, plyometrics, throwing, bodyweight work, and traditional “weight training” activities.



STRENGTH/POWER/SPEED DEVELOPMENT CONTINUUM FOR HIGH SCHOOL TF ATHLETES



THE EFFECT OF SPEED/VELOCITY ON STRENGTH DEVELOPMENT



Speed throughout → More efficient muscle recruitment →
“Smart,” coordinated, elastic muscles → reduced injury.



USE STRENGTH TRAINING TO ENHANCE YOUR TECHNICAL POINTS



- Your track work itself is just very specific strength training
- Use strength training activities to enforce and enhance concepts learned on the track.

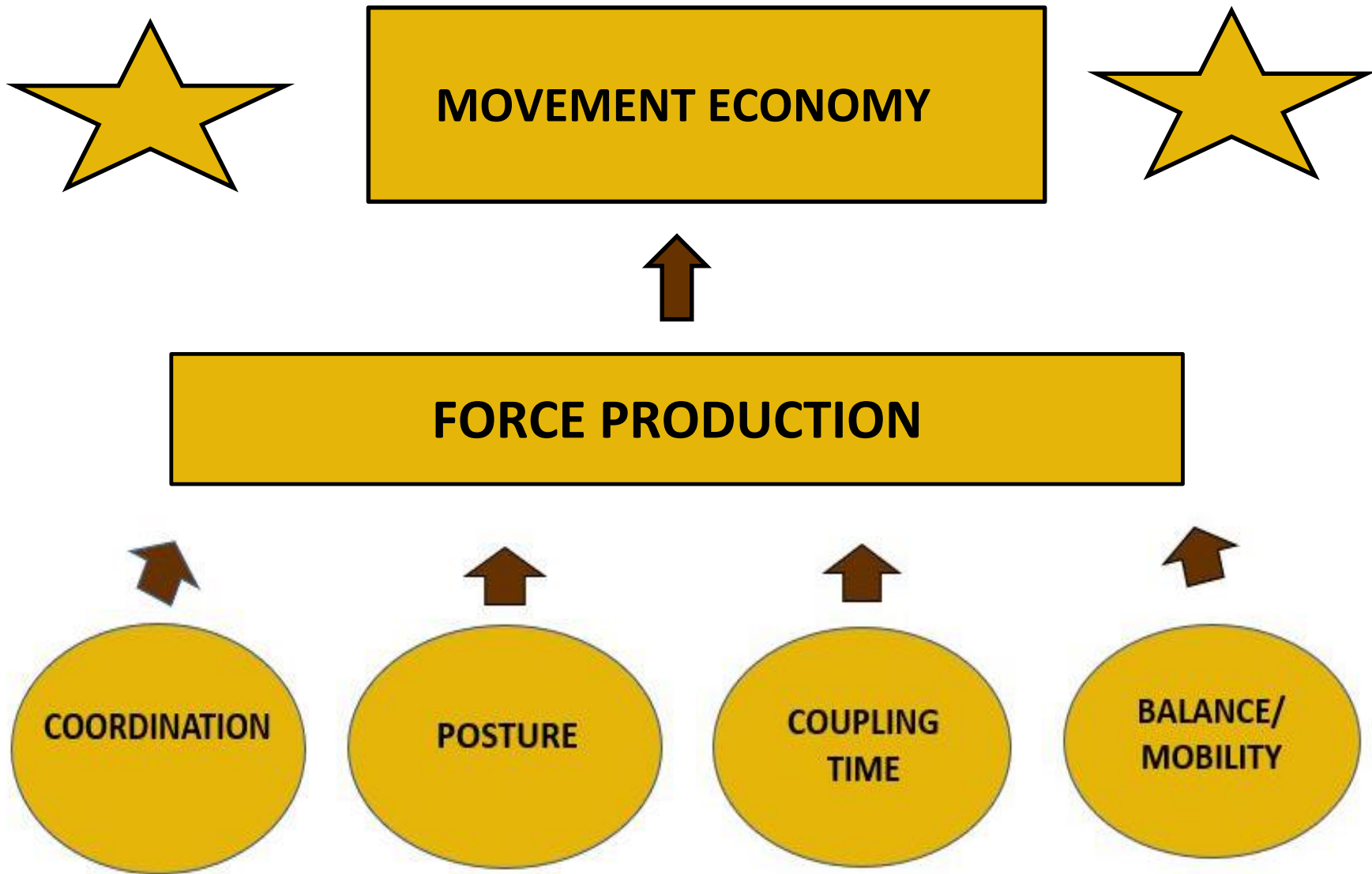


USE STRENGTH TRAINING TO ENHANCE YOUR TECHNICAL POINTS

In general, **ALL** track and field events, including distance running, train **movement economy**. That is, the athlete's ability to absorb force and produce force efficiently.

Otherwise known as
FORCE PRODUCTION





ACTIVITIES TO TRAIN FORCE PRODUCTION SKILLS

- ☑ Posture
- ☑ Coordination
- ☑ Coupling time
- ☑ Balance/ Mobility



ORGANIZING YOUR STRENGTH TRAINING

SAMPLE WORKOUT TO ENHANCE FORCE PRODUCTION TRAINING (BEG/INT HS ATHL):

- 1. WARMUP: SPRINT DRILLS, WALKING HURDLE MOBILITY**
- 2. IN-PLACE JUMP CIRCUIT: 12 EXERCISES, 15 SEC EACH, 30 SEC REST. 9 MINUTES TOTAL CIRCUIT TIME**
- 3. BACKWARD OVERHEAD THROWS X 6**
- 4. FORWARD UNDERHAND THROWS X 6**
- 5. HAMMER THROW RIGHT X 6**
- 6. HAMMER THROW LEFT X 6**



ORGANIZING YOUR STRENGTH TRAINING

SAMPLE WORKOUT TO ENHANCE FORCE PRODUCTION TRAINING (INT/ADV HS ATHL):

- 1. SPRINT DRILLS WITH RUNOUTS, SKIPPING HURDLE MOBILITY**
- 2. R-L-R-L-LAND BOUNDS X 5 REPS (25 TOTAL TAKEOFFS)**
- 3. CLEAN PULLS 4 SETS OF 5 AT 70-80% ESTIMATED 1 RM**
- 4. SPLIT SQUAT 3 SETS OF 5 SQUATS PER LEG at 70-80% EFFORT**
- 5. SKIPS FOR HEIGHT 2 SETS OF X 6 TAKEOFFS**



USE STRENGTH TRAINING TO PROVIDE BALANCE AND ENHANCE YOUR RECOVERY DAYS

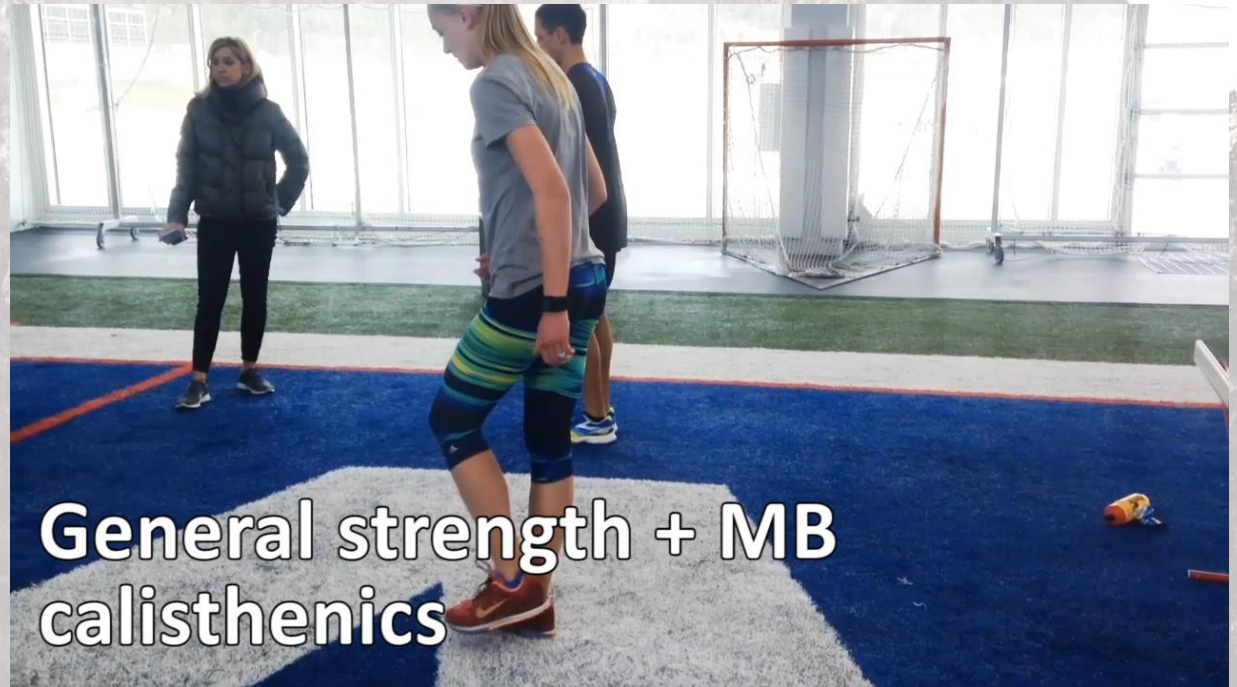
We don't train at maximal effort every day. We use submaximal effort track sessions to enhance recovery. We can complement these sessions with strength training protocols that also enhance recovery and provide muscular balance.

Otherwise known as
"CHILL" DAYS



ACTIVITIES TO ACCELERATE RECOVERY and BALANCE THE BODY

- ☑ Common theme
- ☑ Exercise selection
- ☑ Move with intent
- ☑ Modify for injuries



ORGANIZING YOUR STRENGTH TRAINING

SAMPLE STRENGTH CIRCUITS FOR RECOVERY AND BALANCE:

BODYWEIGHT CIRCUIT:

PERFORM EACH EXERCISE FOR 30 SEC. TAKE 15 SEC REST. PROCEED TO NEXT EXERCISE. 8 MIN CIRCUIT

- 1. PRISONER SQUAT**
- 2. DECLINE PUSHUPS (FEET ON BLEACHERS)**
- 3. V-UPS**
- 4. LATERAL LUNGES R**
- 5. LATERAL LUNGES L**
- 6. YOGIS**
- 7. LUNGE-RETURN ALTERNATE R-L**
- 8. INCLINE PUSHUPS (HANDS ON BLEACHERS)**
- 9. SUPINE R/L HEEL TAPS**
- 10. MOUNTAIN CLIMBERS**

PARTNER MED BALL CIRCUIT:

PERFORM EACH EXERCISE FOR 10 REPS. TAKE 15 SEC REST. PROCEED TO NEXT EXERCISE. APPROX 8 MIN CIRCUIT

- 1. KNEELING OVERHEAD PASS**
- 2. STANDING SCOOP PASS R**
- 3. STANDING SCOOP PASS L**
- 4. ROTATIONAL CHEST PASS R**
- 5. ROTATIONAL CHEST PASS L**
- 6. SLAMDOWNS WITH JUMP**
- 7. ROTATIONAL SLAMDOWNS R**
- 8. ROTATIONAL SLAMDOWNS L**
- 9. TRICEP THROWS**



ORGANIZING YOUR STRENGTH TRAINING

SAMPLE WEIGHT CIRCUIT FOR RECOVERY AND BALANCE:

2x 10 REPS AT APPROX 75% EFFORT.

TAKE 60 SECONDS REST AFTER EACH EXERCISE.

REPEAT ENTIRE CIRCUIT ONE TIME

- 1 Lat pull down
- 2 Hamstring curl
- 3 Hanging knee ups
- 4 DB or BB upright row
- 5 Leg extension
- 6 Weighted back hyper with twist R-L
- 7 Tricep extension
- 8 Windmills
- 9 Single leg RDL R
- 10 Single leg RDL L



ORGANIZING YOUR STRENGTH TRAINING

Step 1: What is the warmup and cooldown?

**Opportunity for daily training
of light force production skills**

Hurdle mobility

- Posture
- Limb stiffness (advanced)
- Vert force development
- Gen strength, balance, coordination

Sprint drills

- Posture
- Limb stiffness (advanced)
- Vert force development
- Gen strength, balance, coordination



ORGANIZING YOUR STRENGTH TRAINING

Step 2: What is the spr/jump/hurdle workout today?

Match the running and strength themes

Recovery and light technique day
"CHILL" ACTIVITIES

- ☑ Circuits- BW, MB, Core
- ☑ Circuits- weight room (BB)

Intervals or speed endurance
"SKILL" OR "CHILL" ACTIVITIES

- ☑ Multi-jumps
 - ☑ Multi throws
 - ☑ Olympic and/or static lifts
- *OR*
- ☑ Circuits- MB, MB Catch-toss
 - ☑ Circuits- weight room (BB)

Accel and speed development
"SKILL" ACTIVITIES

- ☑ Multi-jumps
- ☑ Multi-throws
- ☑ Olympic and/or static lifts



ORGANIZING YOUR STRENGTH TRAINING

Step 2: What is the throwing workout today?

Match the throwing and strength themes

Recovery and light technique day
"CHILL" ACTIVITIES

- ☑ Circuits- BW, MB, Core
- ☑ Circuits- weight room (BB)

Full throw sessions (light and regular implements)
"SKILL" ACTIVITIES

- ☑ Multi-jumps
- ☑ Multi throws
- ☑ Olympic and/or static lifts
- ☑ Short sprints

Full throw sessions (heavy & regular implements)
"SKILL" ACTIVITIES

- ☑ Multi-jumps
- ☑ Multi throws
- ☑ Olympic and/or static lifts
- ☑ Short sprints



ORGANIZING YOUR STRENGTH TRAINING

Step 2: What is the distance workout today?

Match the running and strength themes

Accel and speed development
"SKILL" ACTIVITIES

- ☑ Multi-jumps
- ☑ Multi-throws
- ☑ Olympic and/or static lifts
- ☑ Short sprints

Long intervals or threshold work
"CHILL" ACTIVITIES

- ☑ Circuits- MB, MB Catch-toss
- ☑ Circuits- weight room (BB)

Recovery runs
"CHILL" ACTIVITIES

- ☑ Circuits- BW, MB, Core
- ☑ Circuits- weight room (BB)



ORGANIZING YOUR STRENGTH TRAINING

Step 3: Troubleshoot

Matching training themes
provides fastest training
adaptation

The weight room is
too small for my
team

We have to lift in the
mornings

We don't have access to
our weight room

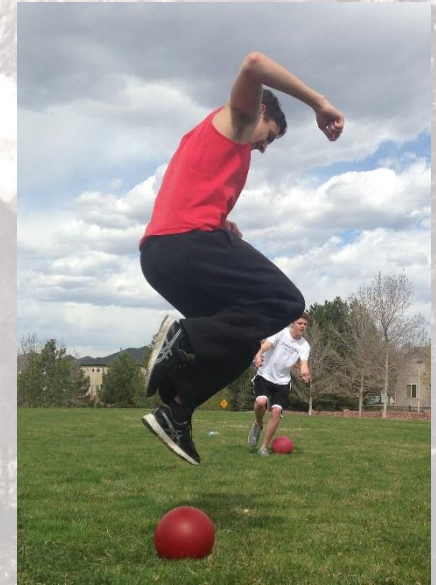
We have a separate
strength coach

We have to lift on the
same days each week



SUGGESTIONS FOR MANAGING YOUR SQUAD

“Strength” training outside the weight room



SUGGESTIONS FOR MANAGING YOUR SQUAD

Large groups on “skill” days

Organize based on skill level

- **vets with rookies**
- **all rookies together**
- **rookies do short, outdoor session only**
- **vets, rookies alternate days in weight room**



SUGGESTIONS FOR MANAGING YOUR SQUAD

Large groups on “skill” days

Employ “Combo training”: combine with track work



SUGGESTIONS FOR MANAGING YOUR SQUAD

Large groups on “chill” days



Relays

**Weight room
partners for circuits**



SUGGESTIONS FOR MANAGING YOUR SQUAD

MAINTAIN A "MENU" OF CIRCUITS

GENERAL STRENGTH

EVEREST (Calisthenics, Rotational)

- 1 Prisoner squat
- 2 Decline Pushups (ft on bleacher)
- 3 V-ups
- 4 Xover/Lateral Lunges
- 5 Tricep Dips (on bleacher)
- 6 Yogis/Kneeling tip backs
- 7 Alternating Lunge-Return
- 8 Incline Pushups (Hands on bleacher)
- 9 Supine P/L heel taps
- 10 Mountain climbers

AMA DABLAM (Calisthenics, Rotational)

- 1 Split squat R (no DB)
- 2 Split squat L (no DB)
- 3 Reverse crunch
- 4 Suitcases
- 5 SL crab position hip lift R
- 6 SL crab position hip lift L
- 7 Mountain climbers wide
- 8 Supermans
- 9 Clap pushups
- 10 V-ups

MAKALU (Calisthenics, bunched)

- 1 Bkwd lunge walk (note easy or hard version)
- 2 SL mountain climber R
- 3 SL mountain climber L
- 4 L-over (no MB)
- 5 Rocket jumps
- 6 Supine hip lifts
- 7 Hip dips R (w or w/o leg elevated)
- 8 Hip dips L (w or w/o leg elevated)
- 9 Bear crawls backward
- 10 Bear crawls forward (you know you love it)
- 11 Stretch loop pac-mans R
- 12 Stretch loop pac-mans L

CORE AND CORE STABILITY

MERU (Core Stability)

- 1 Elbow Hip dip R
- 2 Elbow Hip dip L
- 3 Prone Trail leg R
- 4 Prone Trail leg L
- 5 Hand Side Plank Abduction R leg
- 6 Hand Side Plank Abduction L leg
- 7 My hammy fans
- 8 Fire hydrant R
- 9 Fire hydrant L
- 10 Hand Side Plank Adduction R leg
- 11 Hand Side Plank Adduction L leg
- 12 Supine plank marching alt R-L

ANNAPURNA (Specialized Calisthenics)

- 1 Supermans
- 2 Kneeling bows w/ rounded back
- 3 Supine hip lifts
- 4 Supermans alt limbs
- 5 Glute bridge
- 6 Supine toe touch alt R-L
- 7 Squirms
- 8 Prone crunch alt shoulder
- 9 Straight leg glute bridge R
- 10 Straight leg glute bridge L
- 11 Supine scissors

CAMP 3 (Specialized Calisthenics, barefoot)

- 1 Forward lunge walks on toes
- 2 Backward lunge walks on toes
- 3 Lateral monster walks with bungee R
- 4 Lateral monster walks with bungee L
- 5 Sumo position heel lifts
- 6 Standing towel grabs R
- 7 Standing towel grabs L
- 8 Lateral low walks R
- 9 Lateral low walks L
- 10 Backward 3-way heel walks
- 11 Backward 3-way toe walks

BODYBUILDING

MOUNT BLANC

- 1 Standing dumbbell press
- 2 Bulgarian squat R
- 3 Bulgarian squat L
- 4 Dumbbell row R
- 5 Dumbbell row L
- 6 Standing side crunch R
- 7 Standing side crunch L
- 8 Weighted back hyper
- 9 Plate pull-over
- 10 Weighted sit ups with feet anchored

MATTERHORN

- 1 Lat pull down
- 2 Hamstring curl
- 3 Hanging knee ups
- 4 DB or BB upright row
- 5 Leg extension
- 6 Weighted back hyper with twist R-L
- 7 Tricep extension
- 8 Windmills
- 9 Single leg RDL R
- 10 Single leg RDL L

JUNGFRAU

- 1 Lat pull down behind neck
- 2 Hanging knee ups
- 3 BB upright row
- 4 Triple jumper hangs
- 5 Kneeling cable cross R
- 6 Kneeling cable cross L
- 7 Tricep extension
- 8 Windmills
- 9 RDL (DL)

MEDICINE BALL

RAINIER (Calisthenics)

- 1 L-over
- 2 Backward lunge-return
- 3 V-ups alt R-L
- 4 Seated taps
- 5 Russian twists
- 6 Seated tricep extension
- 7 Standing Fig 8 pass R
- 8 Standing Fig 8 pass L
- 9 Split jumps MB OH or chest
- 10 Squat to press
- 11 Kneeling bow flat back
- 12 Rotational slamdowns R
- 13 Rotational slamdowns L

SHASTA (Catch-toss)

- 1 Standing scoop pass R
- 2 Standing scoop pass L
- 3 Pike passes
- 4 Standing OH pass
- 5 Behind-the-back flicks
- 6 Superman throws
- 7 Seated lateral pass R
- 8 Seated lateral pass L
- 9 Seated medial pass R
- 10 Seated medial pass L
- 11 Russian twist legs elevated R
- 12 Russian twist legs elevated L
- 13 MB reach and hike

MOOSES TOOTH (Calisthenics, light plyos)

- 1 Kneeling OH pass
- 2 Standing scoop pass R
- 3 Standing scoop pass L
- 4 Rotational chest pass R
- 5 Rotational chest pass L
- 6 Slamdowns (jump optional)
- 7 Rotational slamdowns R (jump optional)
- 8 Rotational slamdowns L (jump optional)
- 9 Tricep throws



SUGGESTIONS FOR MANAGING YOUR SQUAD

Working with Weights Class and Strength Coaches



Addressing the “Athlete Tug of War”

[This Photo](#) by Unknown Author is licensed under [CC BY-ND](#)



CONCLUSION

1. Speed/power = early and often

2. Strength training = a teaching tool

3. Strength training = for recovery and balance

4. Matching training themes = faster adaptation

5. Plan and anticipate logistical issues



REFERENCES/ SUGGESTED READING:

- Balsalobre-Fernández C, Santos-Concejero J, Grivas G V. Effects of Strength Training on Running Economy in Highly Trained Runners: A Systematic Review With Meta-Analysis of Controlled Trials, *J Strength & Conditioning Research*. 2016. 30 (8): 2361-2368.
- Bosch, Frans. Strength Training and Coordination: An Integrative Approach. 2010 Uitgevers. 2015
- Haff, G and Nimphius, S. Training Principles for Power. *NSCA*, Dec 2012
- Kawamori, N and Haff, G. The optimal training load for the development of muscular power. *J Strength Cond Res*. 2004 Aug 18 (3): 675-84.
- Knowles, B (interview). *Reconditioning with Bill Knowles*. GAINcast episode 49, <http://www.hmmrmedia.com/2017/01/gaincast-episode-49-reconditioning-with-bill-knowles/> Jan 26, 2017
- Komi, P., ed. Strength and Power in Sport. Blackwell Scientific Publications. 1992.



REFERENCES/ SUGGESTED READING:

- Mann R, Sprague P. A Kinetic Analysis of the Ground Leg During Sprinting, *Research Quarterly for Exercise and Sport*. 1980. 51;2, pp 334-348.
- Marian 2016. 8-week jump squat training improves sprint, squat, and vert jump performance, *J Sports Sci Med*, 2016 Aug 5;15(3):492-500. eCollection 2016.
- Myers, T. Anatomy Trains. Churchill Livingstone. 3e.
- Radcliffe, J and Farentinos, R. High-Powered Plyometrics. Human Kinetics. 2e.
- Sale D. Neural adaptation to resistance training. *Med Sci Sports Exerc*. 1988. 20 pp s135-145. 1988.
- Schexnayder, B, et al. TRACK AND FIELD ACADEMY SCC CURRICULUM. 2013.
www.ustfccca.org/track-and-field-academy



THANK YOU!

clane10@uwyo.edu

@coachcarriane (FB, Insta, Twit)

Videos available at: www.verticalpush.com/news



COPYRIGHT:

All materials contained in this presentation are the property of Carrie Lane. They are intended for your private, educational use only. Posting, publishing, duplicating, broadcasting, distributing, or using these materials in any other way is strictly prohibited.

