RAMP Up the Warm-Up

Colorado Health & Physical Education Summit - June 4, 2026

Chris Hecht, MA, CSCS*D, RSCC*E

Kiowa School District C-2, Kiowa, CO

Bio

26 years – Physical Education/Health teacher

26 years - Athletic Coach – 7 different sports for grades 3-12

30 years – Performance Trainer/Strength & Conditioning Coach

BA Fitness & Exercise Kinesiology, Physical Education: Coaching Minor

MA Kinesiology – Exercise Physiology

Post-graduate coursework – Physical Education Pedagogy

Certified Strength & Conditioning Specialist (with Distinction) CSCS*D

Registered Strength & Conditioning Coach (Emeritus) RSCC*E

NSCA LTAD SIG Executive Council Member (2018-2024)

NSCA CO State Advisory Board Member (2016-2022)

SHAPECO State Board Member (2023-2025)

checht79@gmail.com

My Role

- Teach K-5 Physical Education, MS Fitness, HS Physical Education/HPE/S&C, MS Football (6-Man)
- Rural community
- ~300 students in district
- 4 days/week schedule (M-Th)
- Daily physical education
  - K-5th – 30 minutes daily
  - 6th – 8th – 50 minutes daily
  - 9th – 12th – 55 minutes daily
  - 9th – 12th Health class – 55 minutes 2 days/week; classroom 2 days/week

Objectives

Attendees will learn about the RAMP principles of a warm-up as it relates to a K-12 physical education class, coaching a practice or pre-game session, or leading into a fitness workout.

Attendees will use the RAMP principles and participate in a sample warm-up framework.

Attendees will expand a RAMP warm-up to create their own “bank” of exercises/movements to craft an effective warm-up and ultimately into a usable RAMPAGE framework to assist in structuring a class, practice, or workout session.

Warm-up Questions

- What do you all know about the warm-up?
- What are the purposes of warming up?
- What does the warm-up for your students look like?
- Does the warm-up have a specific aspect you are emphasizing?
- Does your warm-up progressively challenge students?
- What are you doing while students are warming up?
- What do you do for a warm-up for yourself?

Introduction

- The rationale of ‘warming-up’ is universally accepted yet undervalued in practice.
- There is growing evidence which questions the usefulness of historic warm-up methods and introduces potential areas for future development.
- Warm-ups were typically employed to serve only two purposes:
  - Prepare the athlete mentally
  - Prepare the athlete physically
- However, warm-ups are now often viewed to serve four primary purposes:
  - Mental readiness
  - Physical readiness
  - Injury prevention/mitigation
  - Performance enhancement
- Warm-ups have evolved to also serve as a method of enhancing performance and reducing or preventing the occurrence of injury.
- The days of a simple 2-minute jog around the field, followed by some poorly coached and light-hearted static stretching are vanishing due to modern knowledge and the accessibility of information.
- Understand not only the *importance*, but also the *potential* of a well-designed warm-up if they are to maximize the athletic potential.

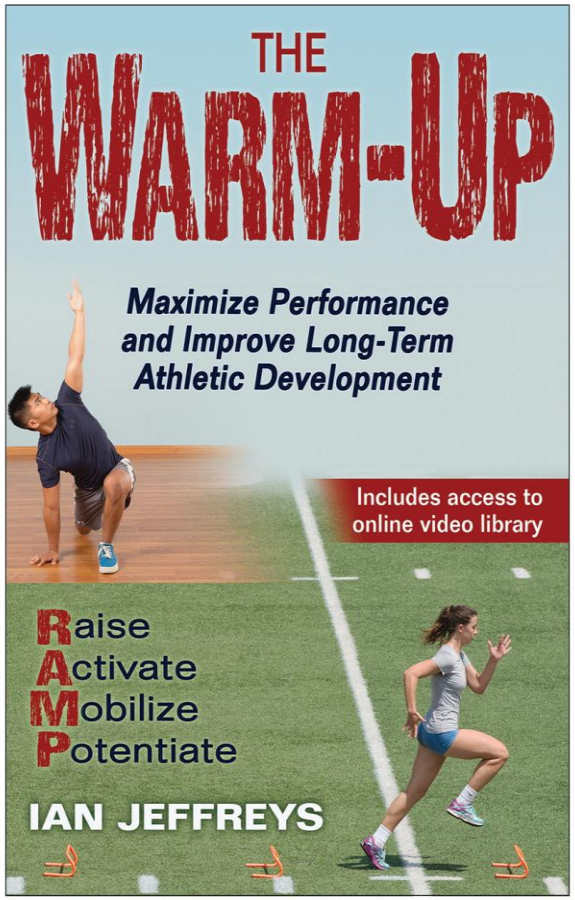
Warm-up

- Use the warm-up to build competence and confidence in fundamental movement skills.
- An effective RAMP warm-up has a cumulative effect over time.
  - For example, a 10-minute warm-up each day for 4 days a week will be 40 minutes for that week.
  - 40 minutes per week x 12 weeks = 480 minutes total
  - This amounts to 8 hours of development over a 12-week span/season.
  - Considering how many hours an athlete will spend just warming-up per year, and how many hours will be spent over the course of an athletic career, can we afford to not use warm-up time more effectively?
- The end of the RAMP warm-up should transition to the beginning of the desired performance.
  - If the intensity of the warm-up does not match the intensity of the performance, there will be a gap that will need to be closed *during* the performance.

Effects

- Raise body core and muscle temperatures
- Target specific movement patterns
- Mobilize through full range of motion (ROM)
- Perform sport-specific activities by gradually increasing intensity.
- Neural CNS & PNS potentiation
- Stimulate/Train proprioceptors
- Coordinates NMJ action potentials
- Motor learning & coordination
- Skill acquisition
- Mental & sensory preparation
- Differential learning/Variability
- Injury prevention/reduction
- Enhance performance
- Better learning w/ fewer reps.
- Long-term effects, i.e., returning to classroom
- Evaluate movement quality
- Faster muscle contraction and relaxation of both agonist and antagonist muscles.
- Improvements in rate of force development.
- Improvements in reaction time.
- Improvements in muscle strength and power.
- Lowered viscous resistance in muscles.
- Improved oxygen delivery due to the Bohr effect (higher temperatures facilitate oxygen release from hemoglobin and myoglobin).
- Increased blood flow to active muscles.
- Increase synovial fluid in joint capsules.
- Enhanced metabolic reactions.

RAMP
Jeffreys, I. (2018)



- ***Raise*** body temperature and other functions (HR, RR, BP, etc.).
  - Fundamental Movement Skills (FMS)
- ***Activate*** body systems, especially nervous & muscular systems.
  - Large Movement Complexes
  - Pre-/Motor cortices, affective/effective motor neurons, reflex arcs, neuromuscular junction innervations, action potentials (APs).
- ***Mobilize*** as many muscles and joints as possible.
  - Large Movement Complexes
  - Dynamic Flexibility
- ***Potentiate*** and leverage hyper-aware nervous system.
  - “After-burn”, “Energized”
  - Neuroplasticity, APs & reflex arcs, EPOC, etc.

Complexity

- Complex movements, not complicated movements.
- 600+ muscles
- 250+ joints
- 30+ Fundamental Movement Skills
- 10 Foundational Skills
- 8 Athletic Motor Skill Competencies (AMSC)
- 6 Resistance Training Skill Literacies (RTSL)
- Standing
- Hands-and-Knees (Quadruped)
- Prone, Supine, Side

Complexity: Fundamental Movement Skills (FMS/FSS/SSS)

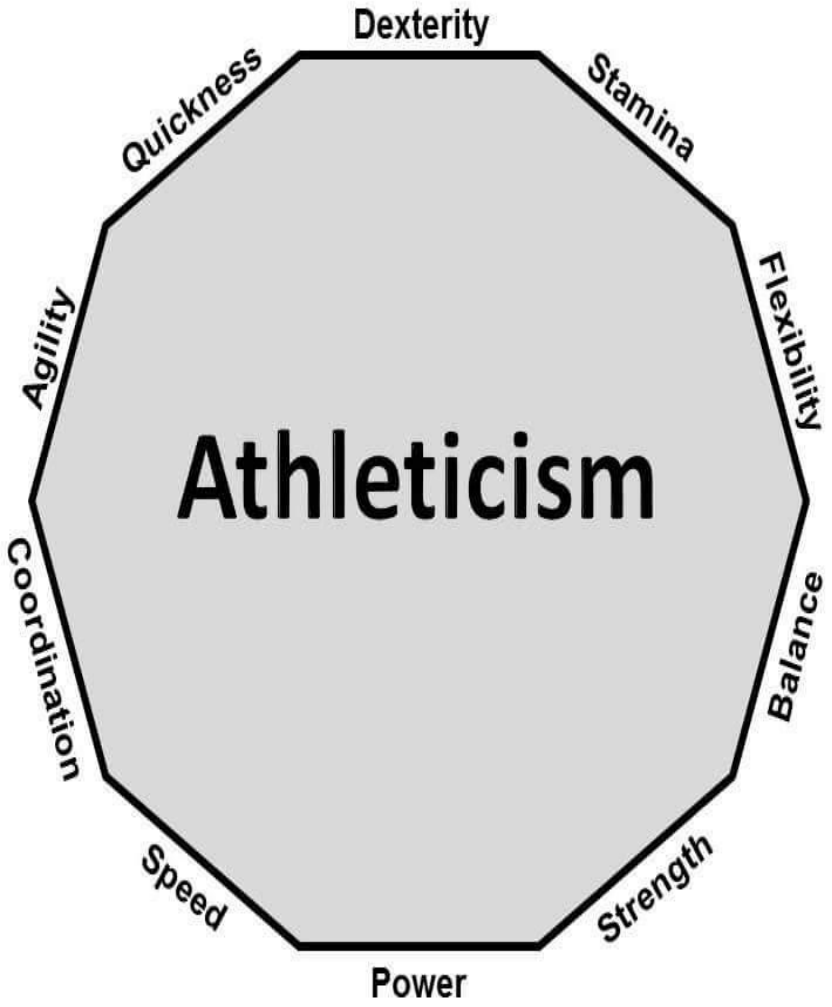
- **Locomotion**
  - Walk, run, bound, leap, skip, hop, jump, roll, gallop, slide, climb
    - Fundamental Movement Skills (FMS)

- **Manipulation**
  - Throw, catch, kick, trap, push, pull, dribble, carry, bounce, strike, collect
    - Fundamental Sport Skills (FSS)
    - Sport Specific Skills (SSS)

- **Stabilization**
  - Turn, twist, bend, land, stretch, extend, flex, hang, brace, rotate, bridge
    - *Shapes* – Tuck, pike, straddle, star, forward straddle, straight, dish, arch, puck
    - *Positions* - Squat, front support, shoulder stand, forward lunge, side support, bridge, lateral lunge, back support, handstand

Complexity: Foundational Skills

- Speed
- Agility
- Quickness
- Strength
- Power
- Balance
- Flexibility
- Stamina
- Coordination
- Dexterity



Complexity: Athletic Motor Skill Competencies (AMSC)

- Fundamental Movement Skills
- Acceleration/Deceleration/Braking/ Stopping/Reacceleration
- Jumping/Landing/Rebounding/Plyometric Abilities
- Lower Body Bilateral
- Lower Body Unilateral
- Trunk/Core/Bracing/Anterior/Posterior/ Lateral/Rotational
- Upper Body Pulling
- Upper Body Pushing

Complexity: Resistance Training Skill Literacy (RTSL)

Resistance Training Skill Literacies

- Breathing
- Dynamic Balance
- Postural Integrity
- Range of Motion
- Stance & Grip
- Tempo & Timing

Intensity

Moderate-to-Vigorous Physical Activity Model

- 10 Maximum
- 9
- 8 Vigorous ----------High end of optimum
- 7 ----------Optimum
- 6 ----------Optimum
- 5 Moderate ----------Low end of optimum

MVPA should occur in this range.

80-85% RM - Power

65-85% RM - Strength

60-85% bpm – THR

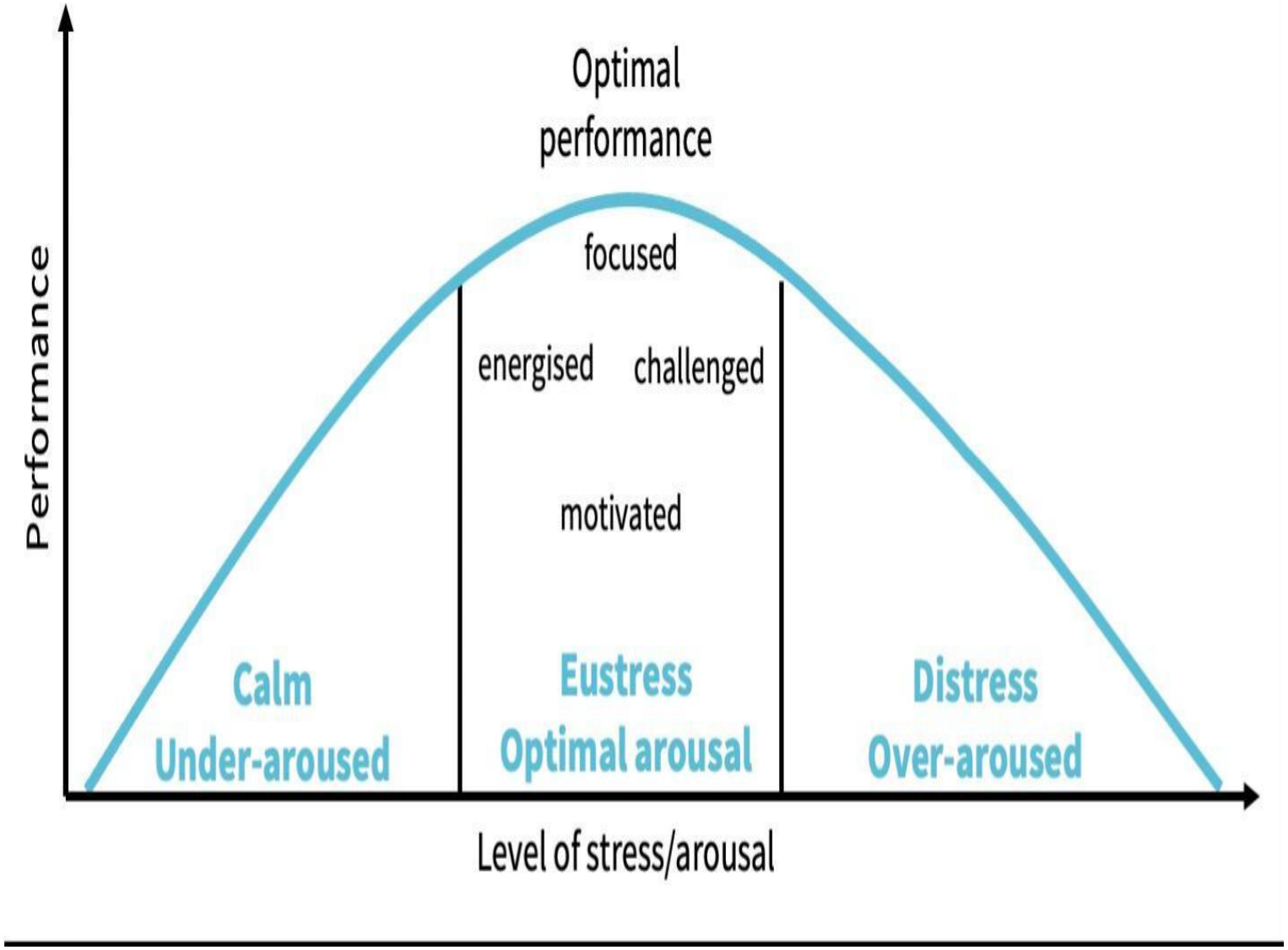
- 4
- 3
- 2
- 1 Minimum

Pediatric Inactivity Triad (PIT)

- Exercise Deficit Disorder
- Physical Illiteracy
- Pediatric Dynapenia

Pediatric Inactivity Triad (PIT) can occur if activity is in this range (between 0-50%) and the intensity is not challenging enough for positive, healthful benefits.

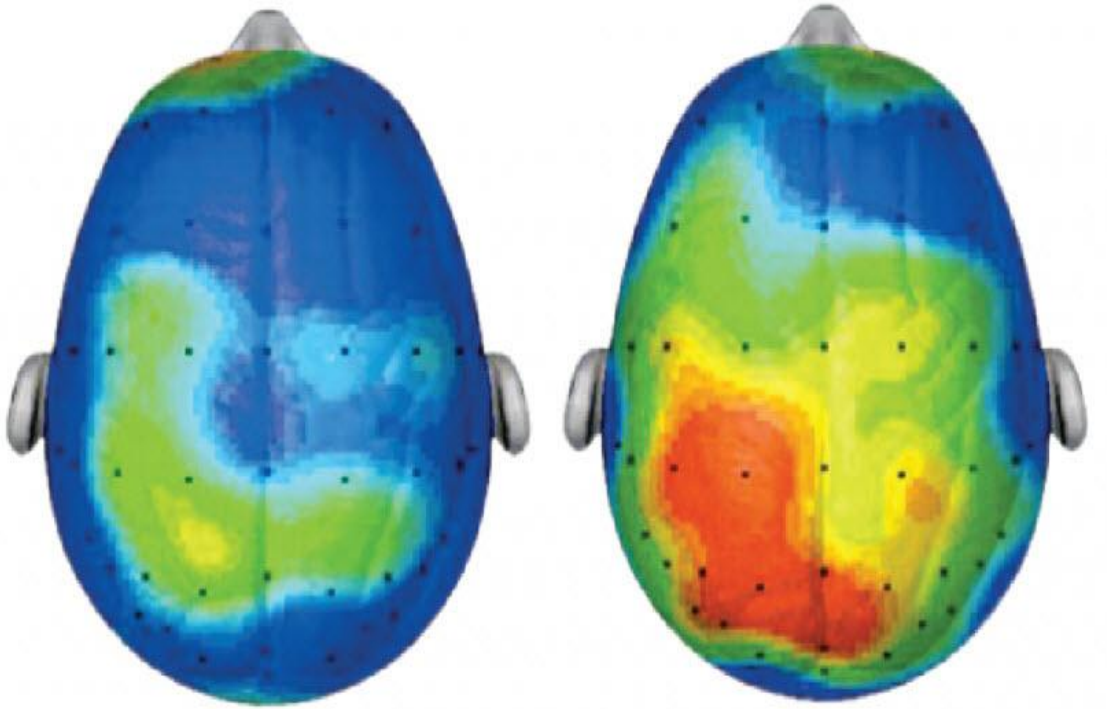
Intensity: Yerkes-Dodson Law (1908)



[THE EFFECT OF ACUTE TREADMILL WALKING ON COGNITIVE CONTROL AND ACADEMIC ACHIEVEMENT IN PREADOLESCENT CHILDREN - PMC (nih.gov)]

MOVE BODY, ACTIVATE BRAIN

WHAT MRI SCANS TELL US*



AFTER SITTING QUIETLY **AFTER 20-MINUTE WALK**

* Schools cut recess (and P.E.) to their own detriment. Even if kids aren't running, they're winning. Above are composites of MRI brain scans of 20 students taking the same test, as measured by University of Illinois researcher Dr. Chuck Hillman. The red sections represent highest amount of neuro-electric activity.

Constructing Effective Warm-ups

- Planning Process
- Raise Phase
- Activation & Mobilization Phase
- Potentiation Phase

Constructing Effective Warm-ups

- **<u>Planning Process</u>**
  - *Logistical Constraint Questions*
    - How many athletes will I be working with?
    - What equipment do I have?
    - What space do I have?
    - How much time do I have?
    - What coaching support do I have?
  - *Session Consideration Questions*
    - What type of warm-up will it be?
    - What is the main session aim?
    - What are the short-term aims of the warm-up?
    - What long-term capacities do I need to develop in the warm-up?
    - What activities did I include in the last warm-up?
    - What activities do I need to progress to in subsequent warm-ups?
  - *Activity Consideration Questions*
    - What are the athlete's capacities?
    - What activities will best achieve the session aims?
    - What is the best time allocation across the three phases?

Constructing Effective Warm-ups

- **Raise Phase**
  - *Type of Raise phase*
    - Movement
    - Skill
    - Combined
  - *Organizational Layout*
    - Box
    - Line
    - Grid
  - *Activities to Achieve the Goal*
    - Single movements & skills
    - Combined movements
    - Tasks
  - *Organization of Activities*
    - Repetitions
    - Sequence
    - Random allocation
  - *Progression of Challenge*
    - Athlete capabilities
    - Controlled intensity

Constructing Effective Warm-ups

- **<u>Activation & Mobilization Phases</u>**
  - *Key Movement Patterns Required*
    - General Pattern
    - Specific Needs
  - *Any Activation Patterns to Address?*
    - For the Activity?
    - For Long-term Performance?
  - *Key Long-term Goals*
    - General Patterns
    - Specific Patterns
  - *Key Activity Selection*
    - Exercises
    - Sequencing
    - Progressions
  - *Progression of Challenge*
    - Athlete Capabilities
    - Long-term Progression

Constructing Effective Warm-ups

- **Potentiation Phase**
  - *Type of Phase*
    - Preparation
    - Competition
    - Main Session
  - *Key Performance Goals*
    - For the Session
    - For the Phase
    - For the Long-term Performance
  - *Key Long-term Movement Goals*
    - General Patterns
    - Specific Patterns
  - *Key Activity Selection*
    - Activities
    - Structure
    - Sequencing
  - *Progression of Challenge*
    - Athlete Capabilities
    - Intensity
    - Challenge

Warm-ups for Youth Athletes Mybergh, G., Pfeiffer, C., & Hecht, C. (2020) Fig. 1

RAMP Protocol	11+	Physical Component		Time in each section	Inexeperienced, young Athlete	Competent, older Athlete
RAISE	PART1	CARDIOVASCULAR ACTIVITY		5 min	Double legged skipping Structured game involving hand-eye coordination e.g. Swedish handball	Skipping with multiple sequencing options (e.g. single legged) Structured game - handicapping components to increase degree of difficulty
ACTIVATE & MOBILISE	PART1	DYNAMIC MOBILITY	Full Body	5 min	Inchworms Stationary spidermans / spidermans /Standing hip flexor stretch	Inchworms into press up Inchworm into Spiderman into thoracic rotation
ACTIVATE & MOBILISE	PART1	DYNAMIC MOBILITY	Lower Limb	5 min	Leg swings - Forward/backwards Leg swings - Lateral Hurdle work: Including moving over and under the hurdle A-Skips B-Skips Carioca	Use of accessory equipment: Foam rollers Trigger point mobility
ACTIVATE & MOBILISE	PART1	DYNAMIC MOBILITY	Upper Limb	5 min	Arm Swings whilst jogging forward and backwards 4 point kneeling thoracic rotation*	Arms swings with skips 4 point kneeling thread throughs with opening up
ACTIVATE & MOBILISE	PART2	BALANCE		5 min	Maintain balance on a drawn line Balance beam walk Single leg balance (for time) Single leg balance - eyes closed (for time) Single leg balance - eyes closed + touchdowns	3 point cone touch* Y-Balance Single leg medicine ball slams
ACTIVATE & MOBILISE	PART2	CO-ORDINATION		5 min	Simon says' game Obstacle course Hop scotch Balloon play Wheelbarrow walking Ball throw and catches with a partner*	Partner ball throw and catches Target practice with a ball - using foot or hands depending on sport
ACTIVATE & MOBILISE	PART2	ACTIVATIONS	Lower Limb	5 min	Bridges Clams Stationary lunges Duck walks* Stationary lateral lunges Lateral glute band walk Monster Walks	Single leg bridges Cossack squats Walking lunges with arms raised overhead Arabesques - with a wooden dowel / kettlebell / bar Curtsey lunge*
ACTIVATE & MOBILISE	PART2	ACTIVATIONS	Upper Limb	5 min	Elastic band exercises: Standing row Elastic band exercises: Chest press Elastic band exercises: Rotator cuff	Increase the resistance of the exercise band used Incorporate catching and throwing exercises with 1 kg medicine ball
ACTIVATE & MOBILISE	PART2	ACTIVATIONS	Full Kinetic Chain	5 min	Band squat to overhead press Forward/Backward lunge with overhead band press Split squat with band rotations*	Overhead squats holding a band/dowel/bar Overhead split squat Olympic lifts and/or derivatives
POTENTIATE	PART2	FORCE PRODUCTION	SSC-Slow	5 min	Jumping jacks Burpees Tuck Jump Countermovement jump (CMJ) Box jump Squat Jump Broad jump Lateral leap Single leg forward hop & stick Single leg lateral hop & stick Split squat	Countermovement jump with upward medicine ball throw Squat jump with upward medicine ball throw Lateral leap and return Split squat jumps with medicine ball rotations Multiple bounds Forward hops with return Repeatitive lateral hops Drop snatch
POTENTIATE	PART2	FORCE PRODUCTION	SSC-Slow	5 min	Light Medicine ball slams (1-2kg) Light medicine ball chest press (1-2kg) Light medicine ball rotational throw (1-2kg)	Inchworm into push up Heavy (3-5 kg) medicine ball drills Sport specific medicine ball drills
POTENTIATE	PART2	FORCE PRODUCTION	SSC-Fast	5 min	Pogo hops* Hurdle jumps Drop Jump and stick	Pogo hops with secondary movement (jump/sprint) Drop jump with secondary jump (vertical/horizontal/lateral)
POTENTIATE	PART3	SAQ		5 min	Linear sprints Linear sprints with deceleration Diagonal/lateral speed work Diagonal/lateral speed work with turn	Repeated straight line sprints Linear sprints with mutiple turns Partner drills Reactor ball drills
POTENTIATE	PART3	SPORT SPECIFIC		5 min	Curvilinear running Playing tag	Movement patterns / sequences specific to the sport

Fig. 2 Example of a 15-minute warm-up, with appropriate exercise selection for an inexperienced young youth athlete and a competent, older youth athlete.

	Inexperienced, young youth athlete		Competent, older youth athlete	
Physical Component	**Exercise**	**Sets & Reps**	**Exercise**	**Sets & Reps**
Cardiovascular Activity	**Double-leg Skip**	**3 min.**	**Double (20 s) & Single (5 s foot) Skip**	**3 min.**
Dynamic Mobility	Inchworms Stationary Spiderman A-Skips B-Skips Carioca Jogging w/ arm swing	1x5 reps 1x4 ea. Leg 10 m 10 m 10 m 10 m	Inchworm -> Press-up Inchworm-> Spiderman Foam Roll Trigger Point Mobility Skipping w/ arm swing	1x5 reps 1x3 ea. Leg 2 min. As Needed 10 m
Balance	Single-leg Balance	1x30 s ea. leg	3-point Cone Touch	1x3 reps ea. cone
Coordination	Wheelbarrow Walking	1x10 m pp	Throw/Catch w/ partner	5 catches pp
Activation	Elastic Band Exercise: Standing Row Elastic Band Exercise: Chest Press Clams Duck Walks Elastic Band Squat-to-Overhead Press	 1x10 reps 1x10 reps 1x10 ea. leg 10 m 1x8 reps	Elastic Band Exercise: Standing Row Elastic Band Exercise: Chest Press Curtsey Lunge Cossack Squat Overhead Squats (band/dowel/bar)	 1x15 reps 1x15 reps 1x8 ea. side 1x4 ea. side 1x6 reps
Force Production	Medicine Ball Slams (2kg.) Broad Jump Lateral Leap-and-Stick Pogo Hops	1x6 reps 1x3 reps 1x3 ea. leg 1x10 reps	Medicine Ball Slams Forward Hops w/ Return Lateral Leap-and-Return 5 Pogo Hops w/ 5 m Sprint	1x8 reps 1x3 ea. leg 1x3 ea. leg 1x3 reps
SAQ	15-m Sprint w/ decelerations 5-m Sprint-and-Return	1x3 reps 1x2 ea. side	Zigzag Sprint over 15 m 5-m Sprint-and-Return Reacting to Partner	1x2 ea. direction 1x2 reps ea. side

ea. = each; kg = kilogram; m = meter; pp. = per person; s = seconds

RAMP: General Movement Example – *Agility & COD*

- ***Activate***
  - Gorilla press, Gorilla 1-arm, Gorilla 2-arms, hip hikes, ankle openers, ankle rockers, ski jumpers
  - Jumping jacks/jills/combinations, spider crawls, mountain climbers, pistol squats
- ***Raise***
  - FW/BW Run, FW/BW Skip, FW/BW Gallop, S2S Shuffle/slide, S2S Carioca/grapevine
- ***Mobilize***
  - Slow and Deliberate – World's Greatest Stretch complex, Inchworms, Figure-4-and-Touch-the-Floor
  - Quick and Correct - Butt Kickers, High Knees, Calf Crushers/Heel Slides
- ***Potentiate***
  - ABC Taps/Leg Raises, Hi-Lo Planks, Yoga Push-ups, Push-ups
  - 2-1-3 shuttle run (1:2 Work:Rest; 15s ON:30s OFF)

RAMP: Unit Specific Example - *Tumbling*

- ***Raise***
  - Ball Rolls, Pencil Rolls, Puppy Rolls
- ***Activate***
  - Neck Circles, Face-up & Face-down Scorpions, Seal/Tent Cycles
- ***Mobilize***
  - Quadruped Series
    - Hip/Spine - Cat/Cow, Dead Bug, Under-the-Bed Reaches
    - Hip/Leg - Extension, Scorpions, Fire Hydrants, Lateral Reaches, Inside-out & Outside-in Circles
- ***Potentiate***
  - Tripods, Spins & Twists (CW/CCW; SL/DL – 90, 180, 270, 360), Super-Spy Move (modified round-off)

RAMPAGE Coaching/Teaching Session Framework

Till, K. et al. (2021)

- ***Raise***
- ***Activate***
- ***Mobilize***
- ***Potentiate***

- ***Activity*** aiming on the technical/tactical aspect of the session.
- ***Games*** to implement techniques/tactics.
- ***Evaluate*** session during cool-down/break-down.

Your Turn!

- ***Raise***
  1)
  2)
  3)
- ***Activate***
  1)
  2)
  3)
- ***Mobilize***
  1)
  2)
  3)
- ***Potentiate***
  1)
  2)
  3)

Key Summary Points

- Myriad of benefits
- Cumulative effects over time
- Pre-screen movements/Check-in effort
- Complexity & Intensity
- Add progressions & complexes
- Hyper-aware nervous system
- Close the gap
- Justify every activity from beginning to end

References

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- PEP Program
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- Warm-up & Cool-down
- Warm-ups for Youth Athletes: Making the First 15-Minutes Cou... : Strength & Conditioning Journal

Thank you!

- CHPEC
- Attendees
- Colleagues & Staff at Kiowa Schools
- Peers & mentors
- Family & Friends
- Chris Hecht – checht79@gmail.com

Colorado Health and PE Summit Feedback Form

- Thank you for engaging in our session today!
- Please leave feedback!
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- https://tinyurl.com/COSummitFB