

Medicine Ball - A Conditioning Tool

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Aims of the Workshop

- Understand the benefits of using medicine balls in a club environment and the transfer to athletic performance for all event groups
- Consider multi-throws with medicine balls in all planes of motion. Tri-planar movement
- Understand how medicine balls can be used in a conditioning circuit to develop work capacity
- After the session be able to observe good 'shape'
- After the session have the confidence to correct faulty technique that might lead to poor performance and/or injury

What is Strength?

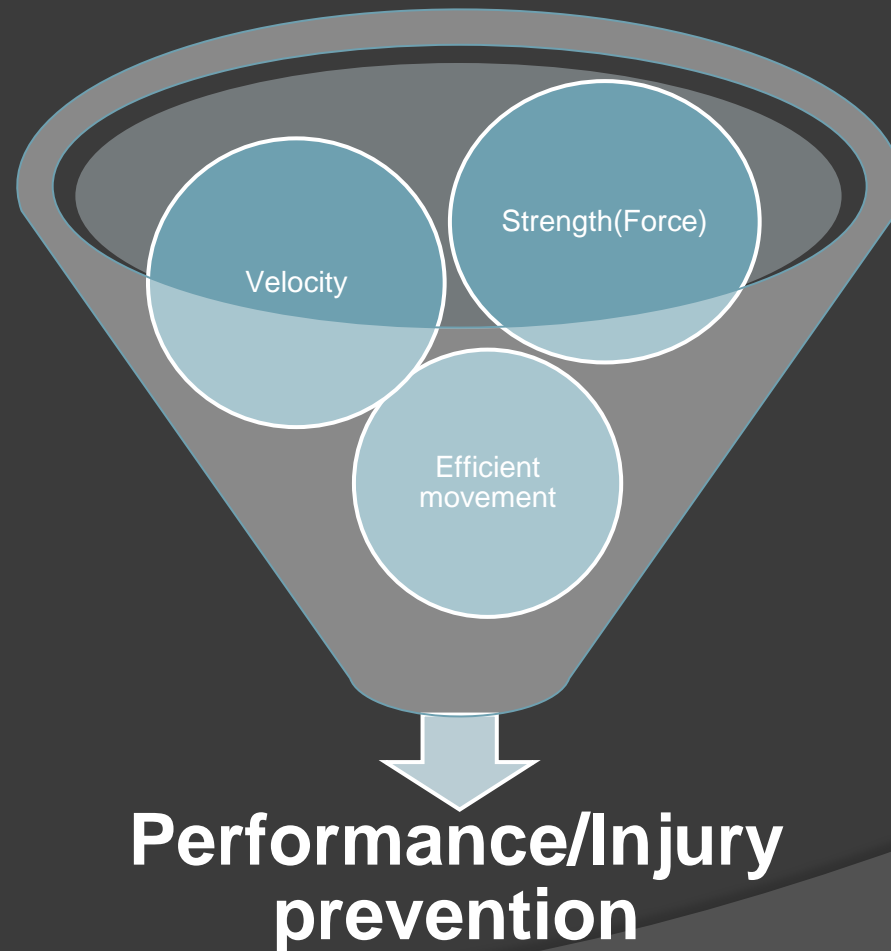
- **The ability of a muscle or muscle group to exert a force against a resistance.**



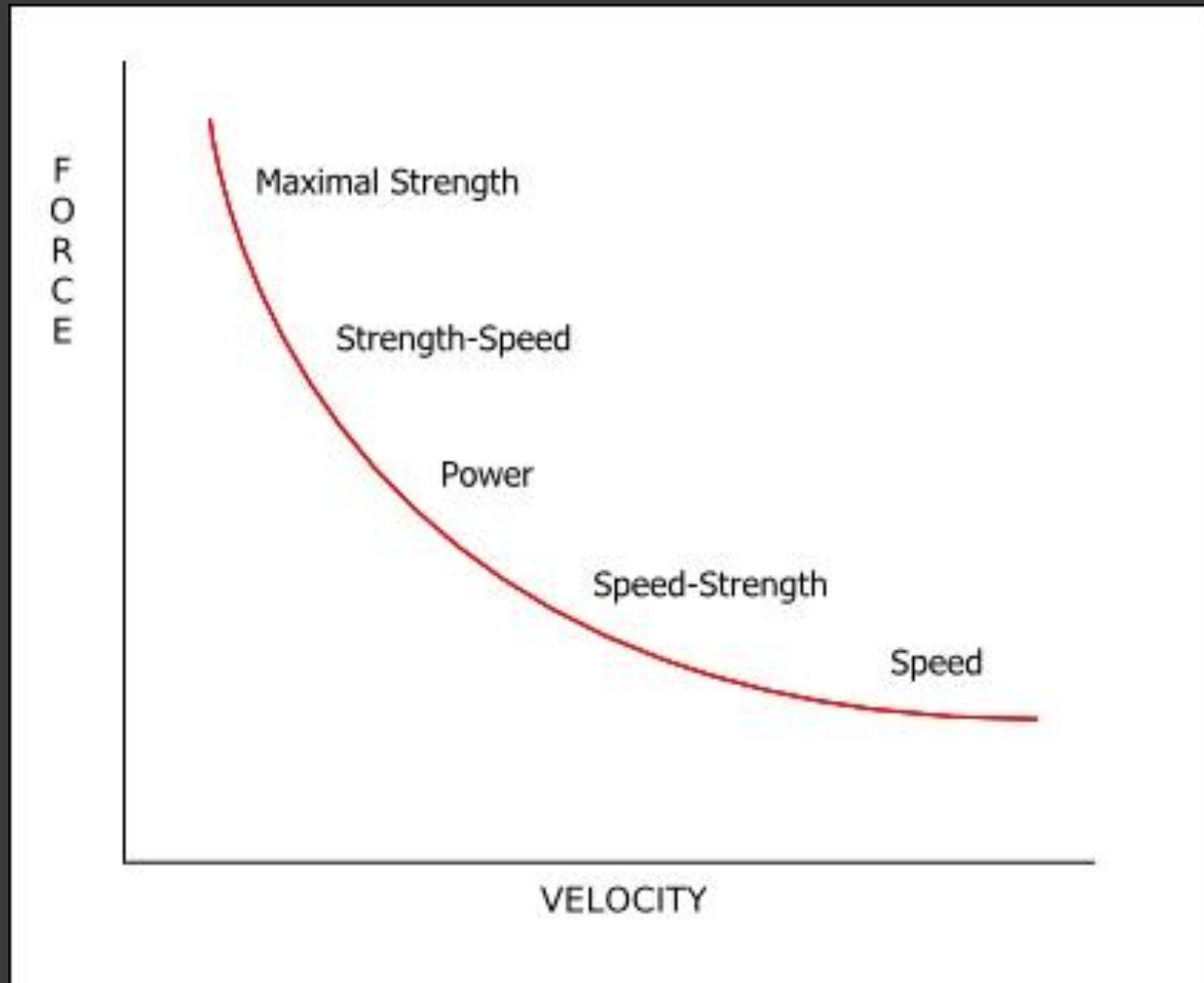
What is Power?

- Power is a product of force (muscular strength) and velocity (speed with direction)
- Power = force x velocity or *simply speed x strength*
- The *rate* at which work is accomplished
- Average power is not generally of great consequence in explosive sports. More important is the Rate of Force Development (RFD)
- RFD = The ability to generate muscle tension in a short period of time.

How can Physical Preparation support successful performance



Force - Velocity Time Curve



Strength – Speed Continuum

Max strength

Strength speed

Speed strength

Max speed



HIGH FORCE

HIGH VELOCITY

Heavy Back Squat

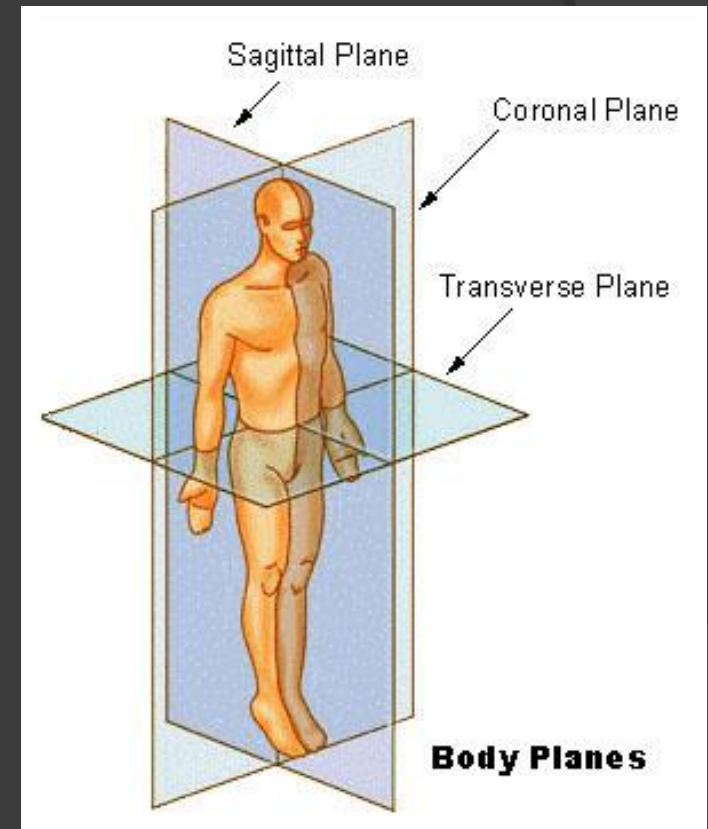
Olympic Lifting

Medicine
Ball throws

Plyometrics

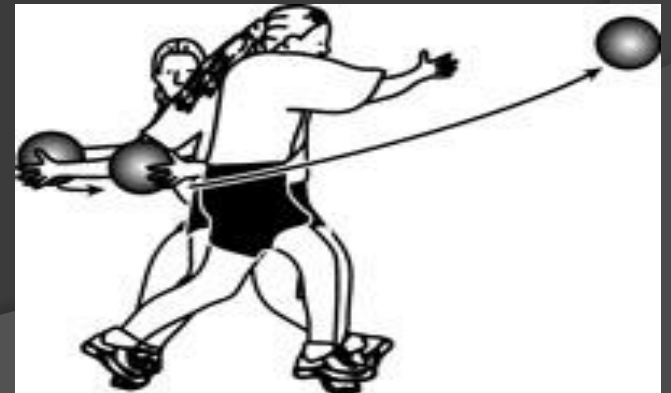
Planes of Motion

- Sagittal plane – a vertical plane that divides the body into right and left halves.
- Coronal or frontal plane – a vertical plane which divides the body into anterior and posterior halves.
- Transverse plane - a horizontal plane which divides the body into upper and lower halves.
- Consider which planes athletics events take place in?
- Is it just one?



The Kinetic Chain

- In athletic movements, the parts of the body work in a kinetic chain and not in a singular fashion. The body is a linked system designed to work in synchronization and not in isolated movements. Throwing involves correct ordering and timing of the movement of the links of the kinetic chain, producing an outcome of functional athletic movement (Gambetta, 2007).



Types of Throws

- Forwards throw
- Sideways throw
- Vertical Throw
- Overhead (backwards) throw
- Overhead forwards throw
- Chop and reverse chop
- Slam

Types of Stance

- A bilateral stance (double support)
- A unilateral stance (single support)
- Split stance (generally rotational movements)
- Half-kneeling
- Kneeling
- Prone or supine (on front or on back)

Underpinning Movements

- Squat and lunge patterns
- Forward, sideways, vertical & overhead movements
- Rotational and diagonal movements
- Proprioceptive exercises

Stability Throws (Trunk & joint conditioning)

- Standing Throws
- Single leg throws
- Kneeling, half-kneeling & seated throws
- Specific shoulder conditioning

Multiple Throws (Force reduction & generation)

- Partner throws
- Wall throws
- Slams and chops
- Multi-directional and rotational

Throws with pre & post movements

- Throws with steps and shuffles
- Throws with jumps (including to boxes)
- Throws with sprints

High Intensity Throws

- Explosive triple extension throws
- High intensity throwing

UKA Exercise Classification Hierarchy (V1.1)

Competitive Exercise (CE)

This term refers to exercises (any activities done in training) that are identical or almost identical to the competition event. For example, for shot putters: throwing the shot (glide or spin), sprinters: various forms of sprint work, jumpers: full jumps with various approach lengths, etc...

Specific Development Exercises (SDE)

Refers to exercises that repeat the competitive event in training but in its separate parts and may include resistance or specific strength exercises (overload training). For example, for discus throwers: stand throws, endurance athletes: hill work, triple jumpers: bounding exercises with or without loads, sprinters: resisted or assisted runs.

Specific Preparatory Exercises (SPE)

This term refers to exercises which do not imitate the movement of the competitive event, but train the same major muscle groups and physiological systems. For example: For throws, sprints and jumps: Olympic lifts and various other maximal strength and special strength (explosive jumping and medicine ball) exercises. For endurance: strength endurance exercises and activities.

General Preparatory Exercises (GPE)

These are exercises that do not imitate the competitive event and do not train their specific systems. Generally speaking, these exercises are very all-purpose and used for general coordination and recovery.

EVENT

CE

SDE

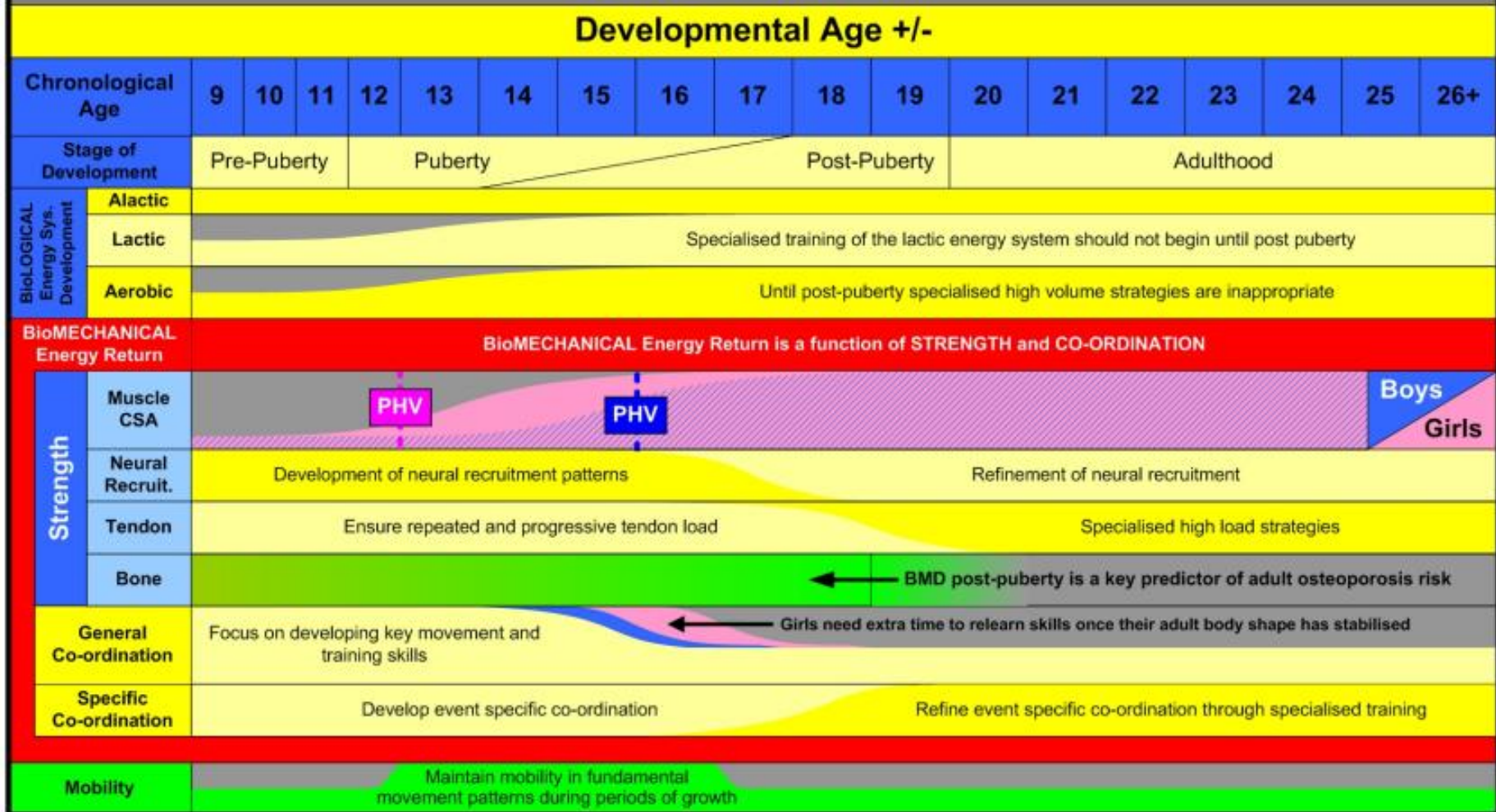
SPE

GPE

Defining Work Capacity

- Ability to tolerate and recover from increasing volumes of training at higher intensities whilst maintaining movement and technical quality.
- Work Capacity is the Ability Maintain the Quality and Intensity of an Activity under Ever Increasing Volumetric Loads and Be Able to Return to Homeostasis in Both Short Term and Long Term. Increases in Work Capacity is Realized by Increasing the Capacity in All the Bio-motor Abilities (Seagrave, 2010).

Figure 3: Training Considerations



*These diagrams are for illustration purposes only. They can only be fully interpreted after reading the accompanying notes and audio presentations.

UKA Athlete Development Model (V1.2)

Developmental Age +/-																				
Chrono. Age	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+		
Stage of Development	Pre-Puberty			Puberty						Post-Puberty				Adulthood						
Education	Primary			Secondary					Further Education		Employment								Higher Education/University	

Figure 5: Conditioning

Conditioning Strategy		Conditioning goals mainly achieved via technical work				Progression Focus				Performance Focus			
Conditioning orientation		Multi-lateral with <i>emphasis</i> on Unilateral and Contralateral				Multi-lateral incorporating Bilateral power movement patterns							
		Technical Focus				Performance Enhancement Focus							
Loading focus		Conservative loading		Comfort loads				Progressive loading		Performance loading			
Exercise Classification Hierarchy	CE	With modified equipment / distances						With modified equipment where appropriate					
	SDE	N/A		Be cautious of activities that compress the spine and avoid excessive repetitive stress		Be cautious of activity that <u>significantly</u> compresses the spine				Full range of means			
	SPE	N/A											
	GPE	Fundamental Movement Skills		General strength		General and ancillary strength		Full range of means					

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Practical