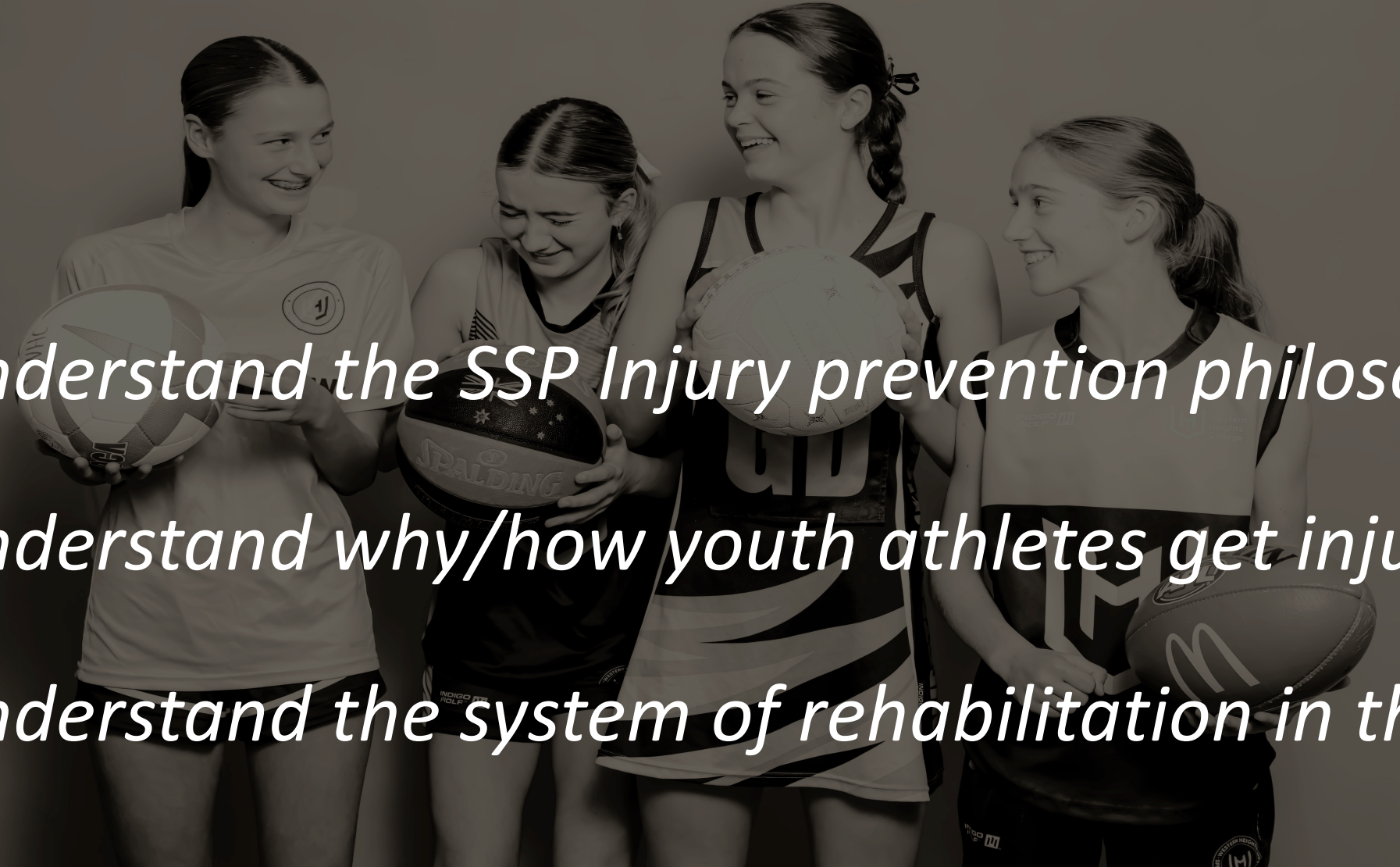


# *Injury Prevention & Rehabilitation in the Adolescent Athlete*



# *3 Take-homes*

- 
- A grayscale photograph of four young women, likely basketball players, standing together and smiling. They are all holding basketballs. The woman on the far left is wearing a white t-shirt with a circular logo. The woman next to her is wearing a dark jersey with 'SPALDING' visible. The woman in the center is wearing a dark jersey with '40' visible. The woman on the far right is wearing a dark jersey with '1' visible. The background is a plain, light-colored wall.
- 1. Understand the SSP Injury prevention philosophy*
  - 2. Understand why/how youth athletes get injured*
  - 3. Understand the system of rehabilitation in the SSP*



# *Perseverance*



*Every athlete* *will get injured in their career*



*The Dan Menzel Story*

# *SSP Injury Prevention Philosophy*



## *Resilience*

*Prevention is better than a cure*

*The training that makes you move better, fitter, faster & stronger → also makes you harder to break*



# *Why Do Injuries Occur?*

*Load*

*Poor Movement*

*Poor Strength & Conditioning*

*Imbalances*

*Maturation*

*Gender*

*Injury History*

*Genetics*

***Sometimes.. Just unlucky***



# Maturation



YOUTH PHYSICAL DEVELOPMENT (YPD) MODEL FOR FEMALES																						
CHRONOLOGICAL AGE (YEARS)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21+		
AGE PERIODS	EARLY CHILDHOOD			MIDDLE CHILDHOOD					ADOLESCENCE								ADULTHOOD					
GROWTH RATE	RAPID GROWTH			↔ STEADY GROWTH ↔					↔ ADOLESCENT SPURT ↔								↔ DECLINE IN GROWTH RATE ↔					
MATURATIONAL STATUS	YEARS PRE-PHV								↔ PHV ↔								YEARS POST-PHV					
TRAINING ADAPTATION	PREDOMINANTLY NEURAL (AGE-RELATED)										↔ COMBINATION OF NEURAL AND HORMONAL (MATURITY-RELATED) ↔											
PHYSICAL QUALITIES	FMS		FMS			FMS		FMS														
	SSS		SSS			SSS		SSS														
	Mobility		Mobility					Mobility														
	Agility		Agility					Agility						Agility								
	Speed		Speed					Speed						Speed								
	Power		Power					Power						Power								
	Strength		Strength					Strength						Strength								
	Hypertrophy								Hypertrophy		Hypertrophy								Hypertrophy			
	Endurance & MC		Endurance & MC						Endurance & MC						Endurance & MC							
TRAINING STRUCTURE	UNSTRUCTURED			LOW STRUCTURE					MODERATE STRUCTURE				HIGH STRUCTURE				VERY HIGH STRUCTURE					

YOUTH PHYSICAL DEVELOPMENT (YPD) MODEL FOR MALES																								
CHRONOLOGICAL AGE (YEARS)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21+				
AGE PERIODS	EARLY CHILDHOOD			MIDDLE CHILDHOOD							ADOLESCENCE							ADULTHOOD						
GROWTH RATE	RAPID GROWTH			↔		STEADY GROWTH				↔		ADOLESCENT SPURT					↔		DECLINE IN GROWTH RATE					
MATURATIONAL STATUS	YEARS PRE-PHV										←		PHV					→		YEARS POST-PHV				
TRAINING ADAPTATION	PREDOMINANTLY NEURAL (AGE-RELATED)										↔		COMBINATION OF NEURAL AND HORMONAL (MATURITY-RELATED)											
PHYSICAL QUALITIES	FMS		FMS				FMS			FMS														
	SSS		SSS				SSS			SSS														
	Mobility		Mobility							Mobility														
	Agility		Agility							Agility					Agility									
	Speed		Speed							Speed					Speed									
	Power		Power							Power					Power									
	Strength		Strength							Strength					Strength									
	Hypertrophy										Hypertrophy		Hypertrophy							Hypertrophy				
	Endurance & MC		Endurance & MC								Endurance & MC					Endurance & MC								
TRAINING STRUCTURE	UNSTRUCTURED			LOW STRUCTURE					MODERATE STRUCTURE				HIGH STRUCTURE				VERY HIGH STRUCTURE							




# *How do we mitigate against injuries?*

A grayscale photograph of four young women, likely basketball players, standing in a row and holding basketballs. They are all smiling and looking towards the right. The woman on the far right is holding an AFL football instead of a basketball. They are wearing various athletic jerseys, some with 'WHC' or 'Western Heights College' logos.

*Load Management & Development*  
*Movement Skills*  
*Strength & Conditioning*  
*Imbalances – Individualisation*

***The better I get the luckier I am***

# *The Rehab Process*

- 
1. *Report to athletic development coach*
2. *Book physio assessment (Mon/Wed/Fri)*
3. *Individual plan*
4. *AD coach to manage within SSP*
5. *RTP is progressed as a team (physio/AD/coaches)*



# *Student Athletes Support*

A black and white photograph of four young women, likely student athletes, standing together and smiling. They are all holding basketballs. The woman on the far left is wearing a light-colored t-shirt with a circular logo. The woman next to her is wearing a dark jersey with 'SPALDING' visible. The woman in the center is wearing a dark jersey with '40' visible. The woman on the far right is wearing a dark jersey with '15' visible. The background is a plain, light-colored wall.

*Team around the athletes*

*Physio - Sports Science - Nutrition - Performance*

*Psychology - Wellbeing - Woman's Health*

# *Athletic Development Team*



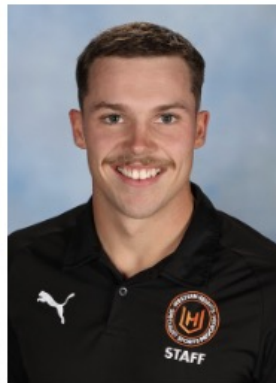
## Football



Will  
Sexton



Charlie  
Perks



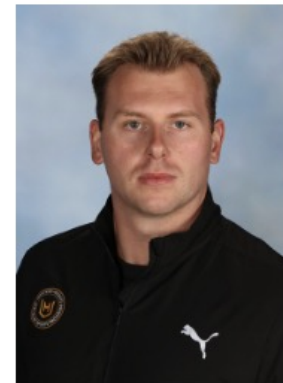
Ryan  
Spoors

## Basketball



Kris  
Blicavs

## Netball



Seth  
Tomlinson

## Soccer



Nick  
Richardson



# *Injury Management In Adolescents*

## *Michael Snelling*



APA Sports and Exercise Physiotherapist

# *Common Adolescent Injuries*

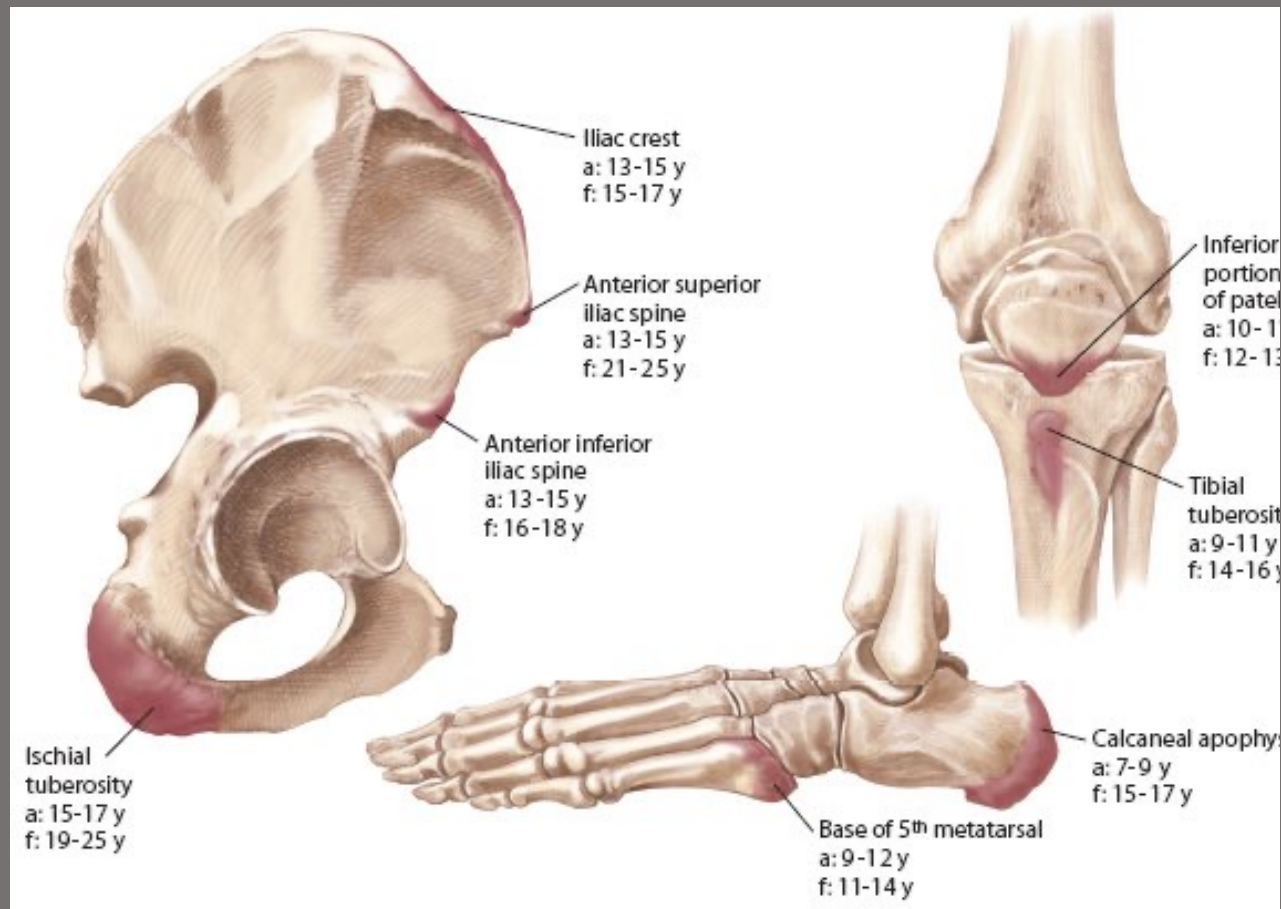
Apophyseal / Tendon interface injuries

Bone stress

- Chronic overload
- Acute fractures/dislocation



# Apophyseal / Tendon Interface Injuries



## Apophysis

= bony prominence for site of attachment of tendon or ligament

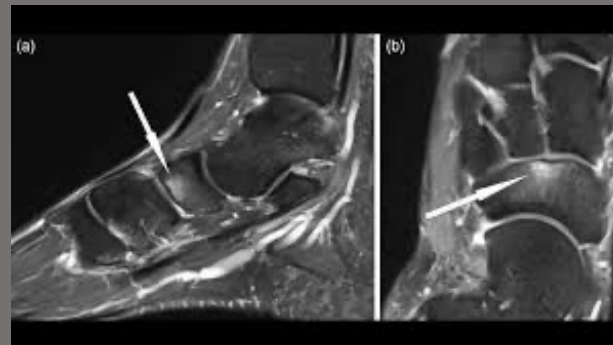
## Common sites of apophyseal injuries

- Front of pelvis – hip flexors (iliacus, rectus femoris, sartorius, TFL, pectineus, adductor longus)
- Bottom of pelvis – hamstrings
- Bottom of kneecap – patella tendon (Sinding-Larsen-Johannsen)
- Top of shin – insertion of patella tendon (Osgood Schlatter's)
- Back of heel – Achilles tendon (Sever's)
- Outside of midfoot – peroneus brevis

# *Bone Stress Injuries*

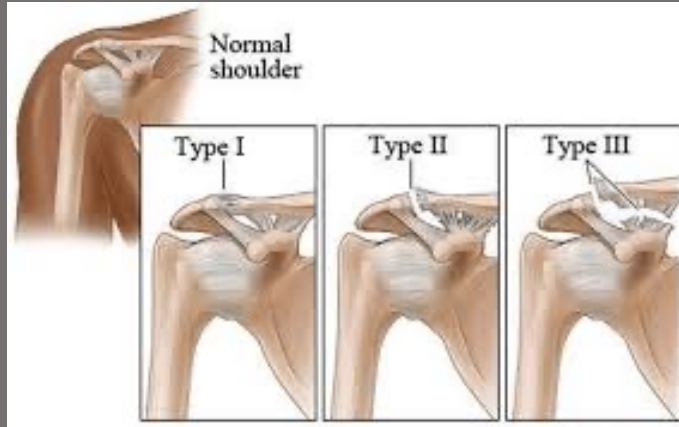
## Chronic overload

- Medial tibial stress syndrome ('shin splints')
- Metatarsal stress (long foot bones)
- Navicular stress fractures (midfoot)
- Lumbar spine (L4 or L5 pars interarticularis)



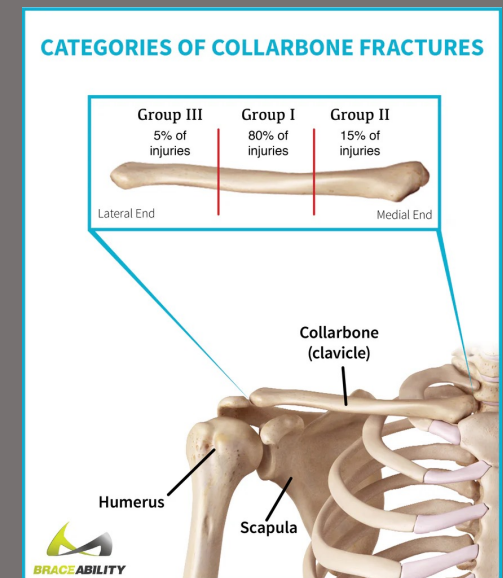
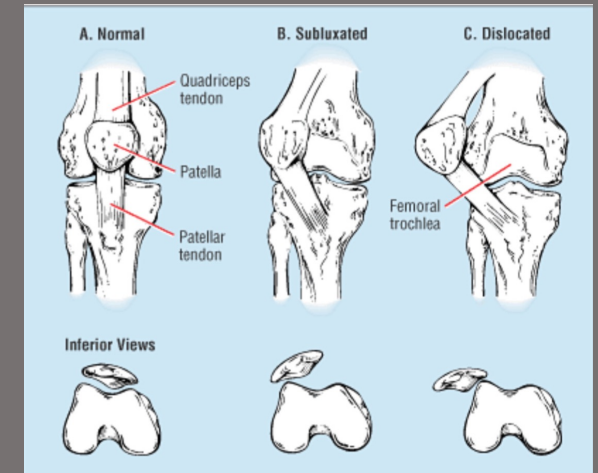


# Bone Stress Injuries



## Acute fractures / dislocations

- Avulsion – lateral malleolus (outside ankle)
- Patella dislocation – common in girls
- Shoulder dislocation
  - AC joint
  - Glenohumeral (ball and socket) joint
- Finger dislocation



# Management of Adolescent Injuries

## Key factors:

1. **MATURATION** (chronological age v biological age)
2. **LOADS**

Always *respect maturation* but *cannot influence maturation*

Always *manage loads* for optimal performance

## What happens with maturation:

- Increased androgen concentrations (changes in bone growth, muscle development and fat distribution)
- Fibre-type differentiation
- Muscle-tendon architectural changes



# *Assessment of Adolescent Injuries*

- Accurate and detailed history
- Understand youth athletes experience with injury
- Always individualised
- Every teenager's body is going through considerable change
- Must consider volume, duration, intensity and type of training over the past year



# *Rehabilitation of Adolescent Injuries*



Always consider modifying training loads rather than ruling out of activity

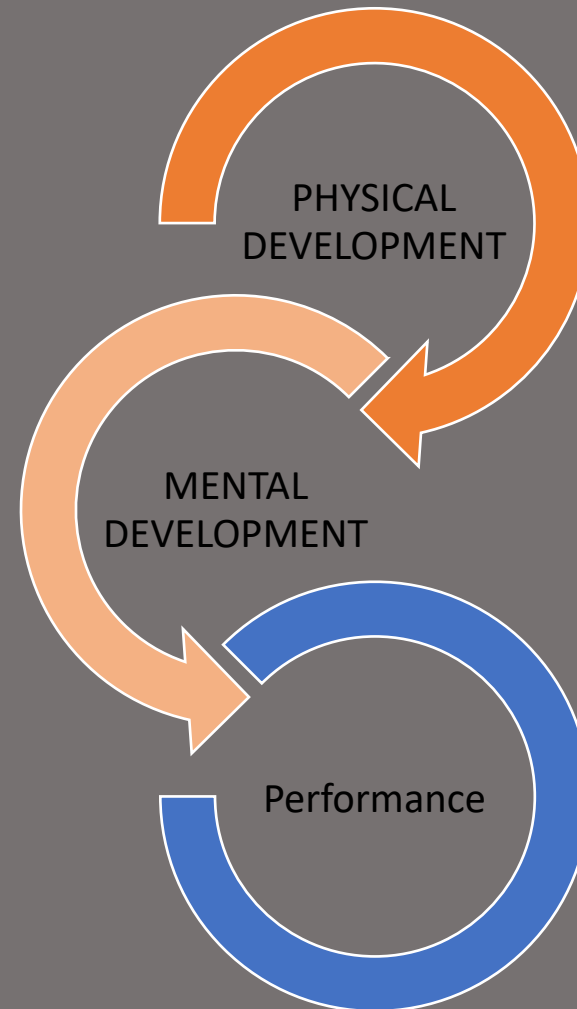
Concentrate on deficits found in assessment

- Commonly related to **MOVEMENT CONTROL** – always correct movement patterns
- Adolescents can always work on strength, power and agility
  - Strength development is not just muscular, it is also related to neural and mechanical properties
  - Improved power can come from learning correct movement patterns and technical competency and neural plasticity (neural contribution to rate of force development).
  - Agility is related to technique, speed, leg length, body shape and perceptual and decision-making processes



# *Adolescent Injuries*

Always consider  
**PHYSICAL & MENTAL  
DEVELOPMENT** over  
performance



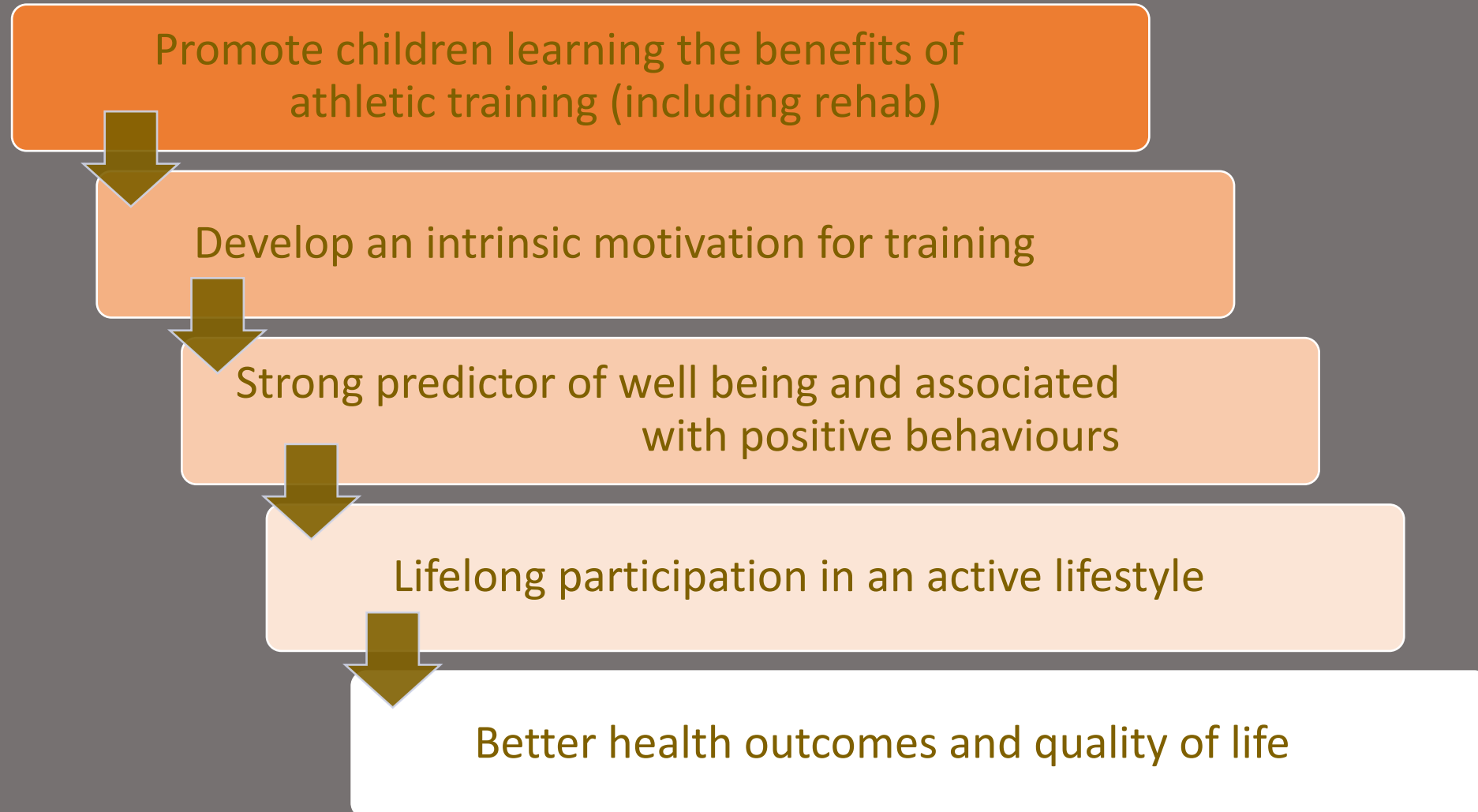
# *Management of Adolescent Injuries*

## KEY POINTS

- Monitor physical growth and load
- Respect a changing body
- Load = number of physical activity sessions completed per week (recommended to write down)



# *Adolescent Injuries*



# *Role of the Coach*

## *Susan Meaney*





# *Coaches Perspective & Role of Coach*

- Athlete First & Wellbeing perspective (balance)*
- Load Management information*
- Promote open proactive communication and honesty*
- Trust people and planning and follow the process*
- Utilise the resources you have!!!!*

*habits of diet, sleep, hydration.*



# *5 Take-homes for Athletes*

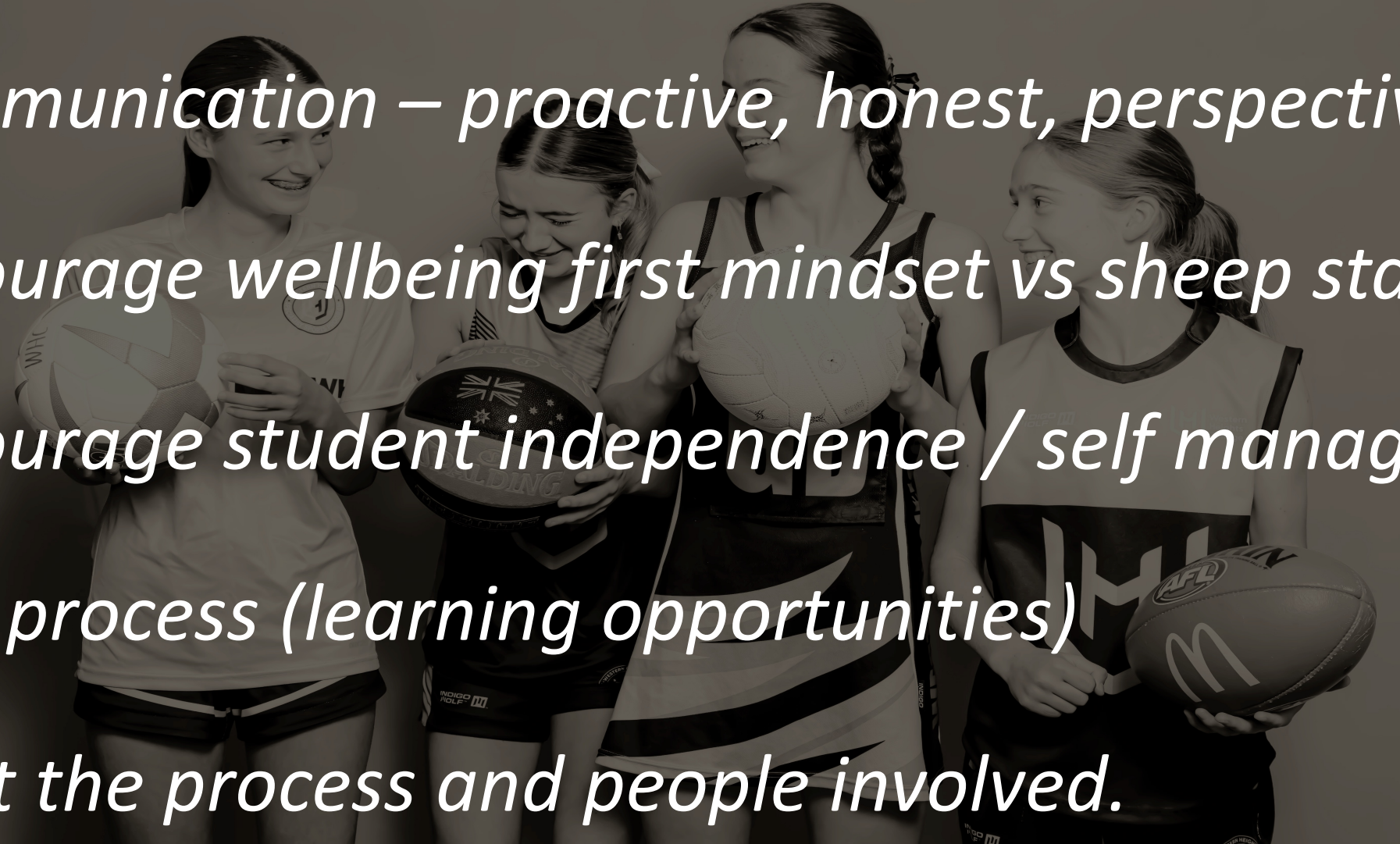


- 1. Communication – proactive, honest, positive mindset*
  - 2. Be diligent in rehab, remain engaged, follow what's asked*
  - 3. Be Kind to yourself, have balance in life.*
  - 4. Set return to training and play goals.*
  - 5. Do not underestimate value of rehab, prehab and good life habits of diet, sleep, hydration.*
- 
- A grayscale photograph of four young female athletes standing together and smiling. They are all holding basketballs. The athlete on the far left is wearing a white t-shirt with a circular logo. The second athlete from the left is wearing a dark jersey with a Spalding logo and a star emblem. The third athlete is wearing a dark jersey with a large 'W' logo. The fourth athlete is wearing a dark jersey with a large 'H' logo. They are all wearing athletic shorts.



## *4 Take-homes for Parents*



- 
- A grayscale photograph of four female students in sports uniforms, smiling and holding soccer balls. The image is semi-transparent, serving as a background for the text.
- 1. Communication – proactive, honest, perspective!!*
  - 2. Encourage wellbeing first mindset vs sheep stations*
  - 3. Encourage student independence / self management in this process (learning opportunities)*
  - 4. Trust the process and people involved.*