



Hamstring rehabilitation: From injury to performance



Terence Chua
Strength and Conditioning Coach
Singapore Sport Institute
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- Bullet-proofing the hamstrings
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What are you currently practicing when your athlete experiences a hamstring injury?




Introduction

Hamstring strain injuries (HSI) account for one of the most common injuries in sport



An injury can sideline an athlete from training time and progress. If not managed properly, athletes may lose further valuable time to persistent injury



What can we do as coaches to **maximise** athlete availability and training progress and **minimize** time off training from injury?

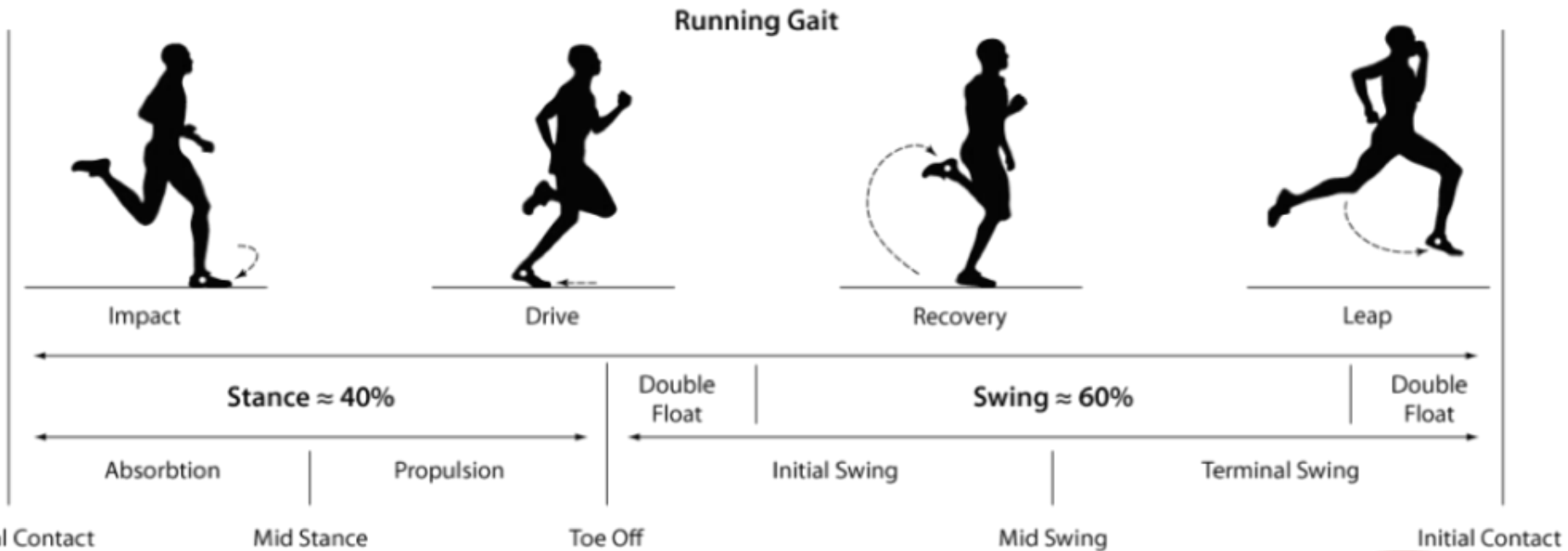
What are the hamstrings?



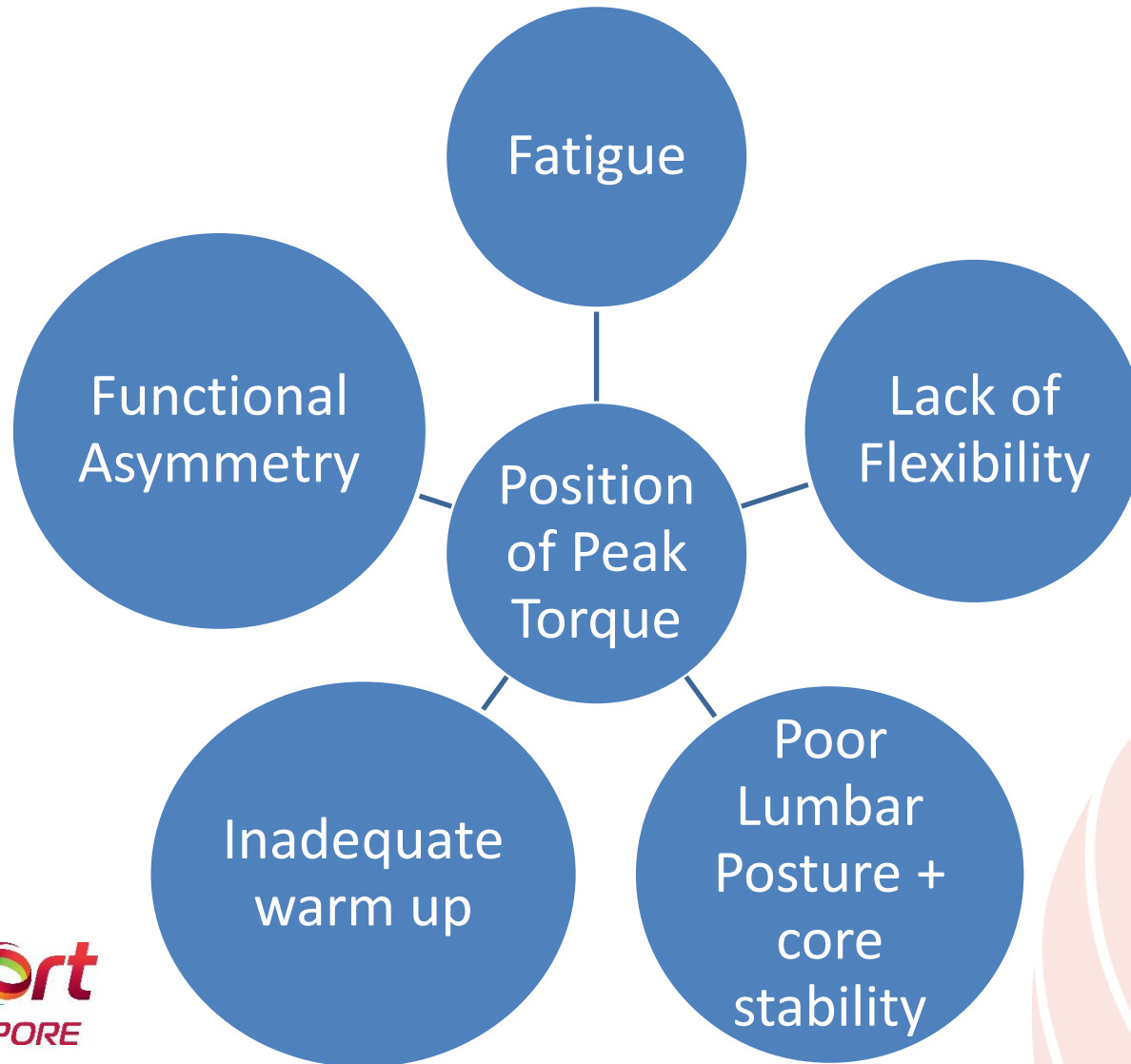
The hamstrings are a group of muscles at the lower extremity:

- Semitendinosus
- Semimembranosus
- Bicep Femoris

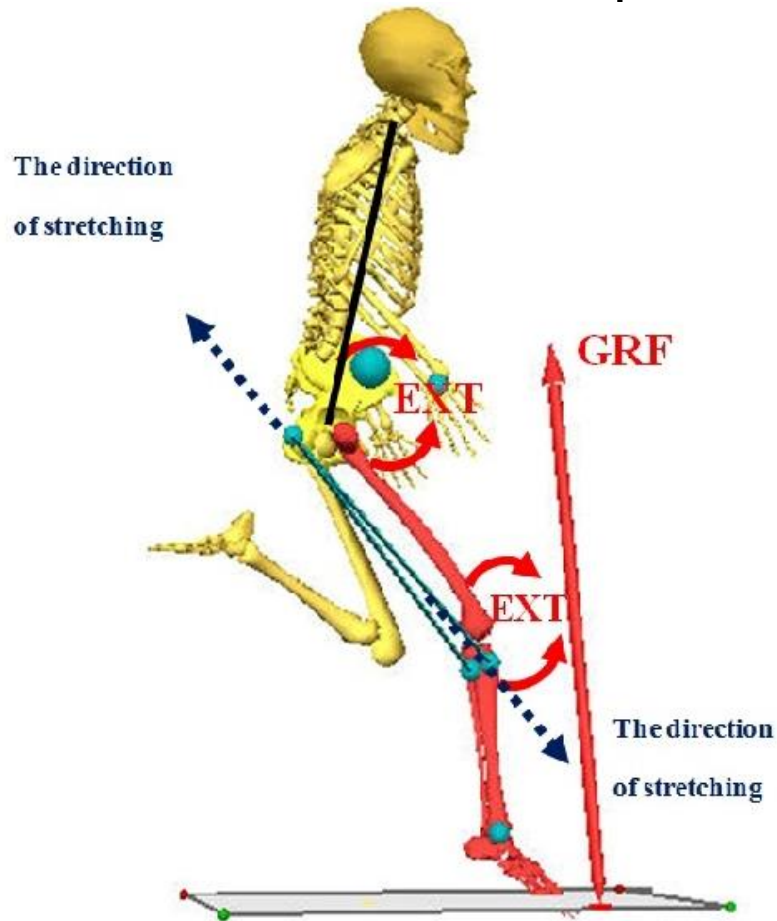
Role of the hamstrings



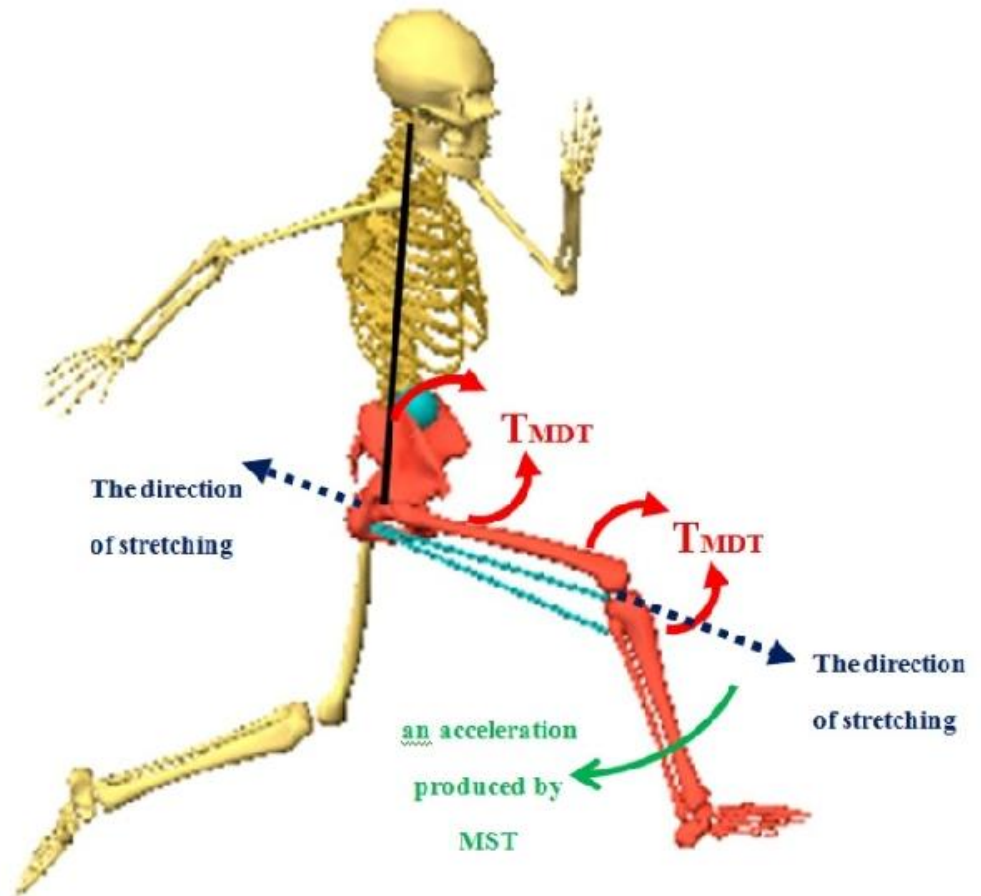
How do hamstring strain injuries occur?



Position of Peak Torque



(a)



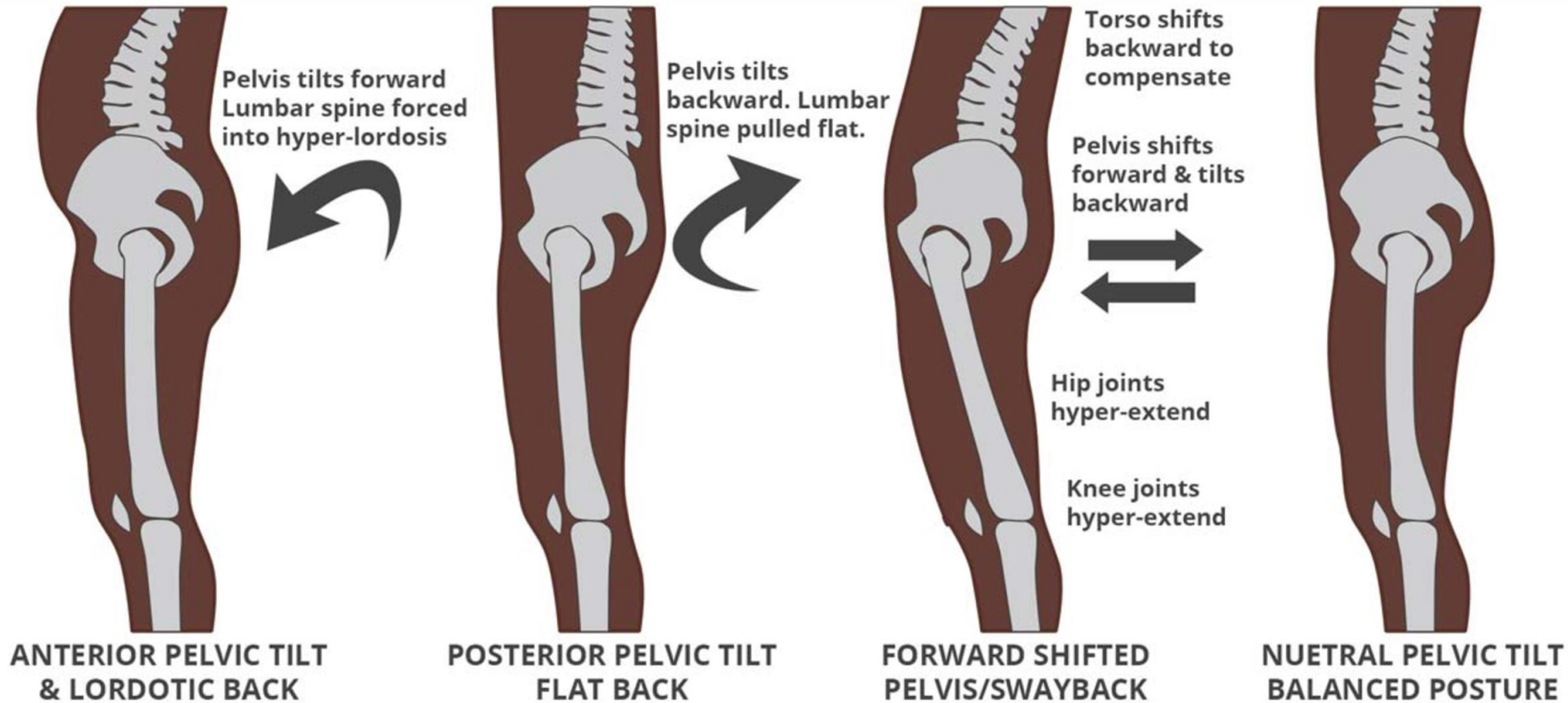
(b)

Figure 2: Diagram of sprinting (a) during the initial stance phase (b) during the late swing phase

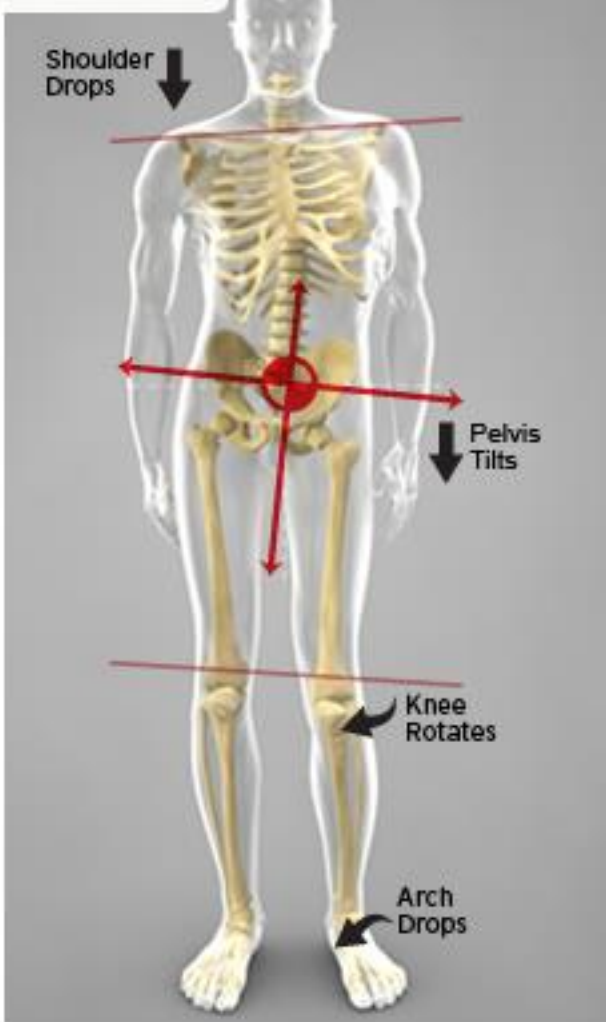
Functional Asymmetry



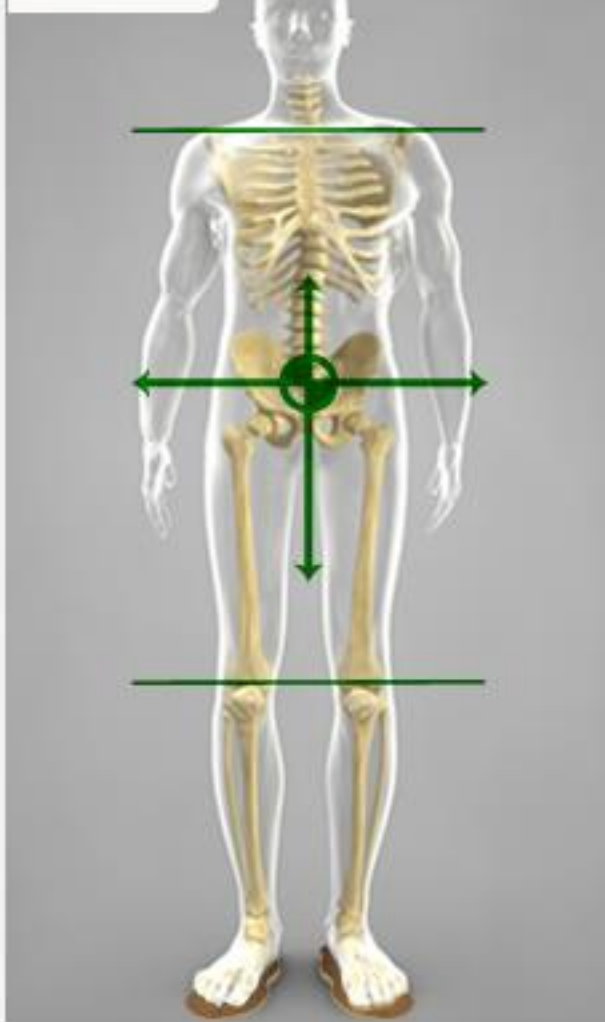
Poor lumbar posture



Imbalanced



Balanced



Injury Grades: Grade 1



Mild strain, minimum tear of muscle-tendon unit, minor loss of strength

Injury Grades: Grade 2



Grade 2: Moderate strain, partial tear of muscle-tendon unit, significant loss of strength resulting in significant loss of functional limitation

Injury Grades: Grade 3



Severe strain, complete rupture of muscle-tendon unit,
severe functional disability

Goal of muscular rehabilitation

Primary goal of muscular rehabilitation:

To allow the athlete to **return to sport** at a level of performance **before the injury** with **minimal risk of recurrence of the injury.**

Vigorous physical activity **after the onset** of musculoskeletal injury may **increase the severity of injury**

Every athlete is different. Progression should be based on:

- **Criteria-based**
- Time-based*
- Athlete tolerance
- Pain, stiffness, anxiety with movement

(Erickson et al., 2017)

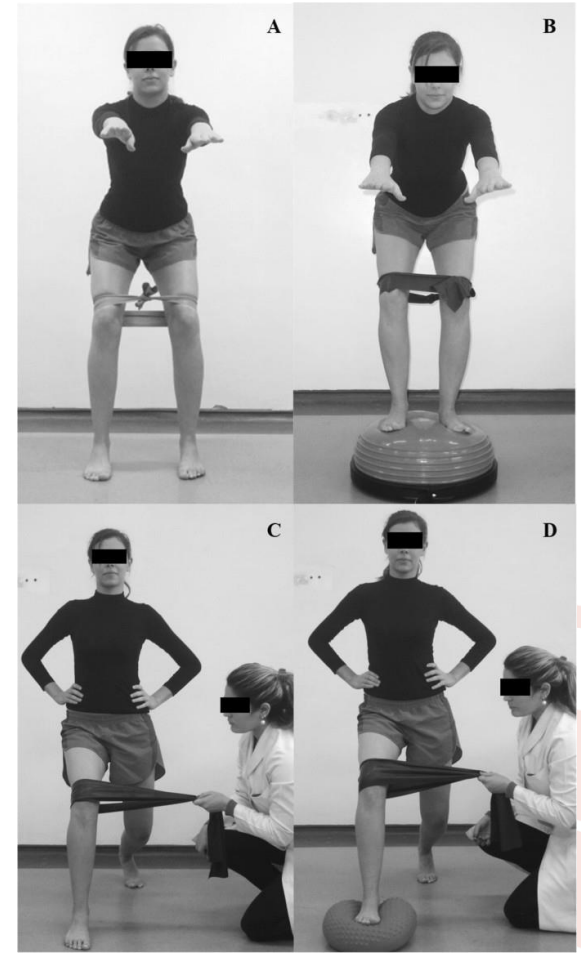
CRITERIA BASED PROGRESSION PROTOCOL



Hamstring rehabilitation guideline: **Phase 1**

Neuromuscular control: Ability to produce controlled movement through coordinated muscle activity

- Minimize pain and swelling
- Restoring normal neuromuscular control at slower speeds
- Preventing scar tissue formation while protecting healing fibers **from excessive lengthening**



Hamstring rehabilitation guideline: **Phase 2**

- Increase intensity of exercise
- Neuromuscular training at faster speeds and amplitudes
- Start of eccentric resistance training

Hamstring rehabilitation guideline: **Phase 3**

- Progression to higher speed neuromuscular training
- Progression to eccentric resistance training in lengthened positions
- Consistent and progressive intensity of strength training

Rehabilitation progression guidelines

- Within pain-free limits
- Pain-free normal walking and slow jogging
- Pain-free range of motion
- or around 75% strength of uninjured side

(Hickey et al., 2017)

When can I start planning exercises for injured athletes?

Practical assessments and functional tests

1) Active Hamstring Test/ Askling Hamstring Test



2) Single Leg Hamstring Bridge Test: repetitions

Poor: <20

Average: 25

Good: >30



3) Sport-related movements:

(With intensity and near maximal speed)

DYNAMIC FLEXIBILITY

H-TEST BY ASKLING

The athlete is lying supine with the contralateral leg and the upper body fixed with a belt.

A knee brace ensures full extension of the tested knee (0°). No warm-up exercises!

Passive flexibility test where the clinician slowly raises the testing leg towards maximal hip flexion. Strong, but tolerable stretching in the hamstring muscle.

The active flexibility test consists of 1 practice trial (submaximal effort) 3 consecutive test trials: The athlete performs a straight leg raise as fast as possible to the highest point without taking any risk.



Sport
SINGAPORE



Fixed with a Strap

0° Full Knee Extension



No Warm-up Exercises

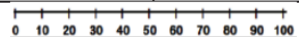
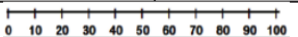
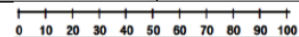
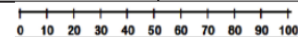
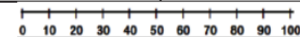
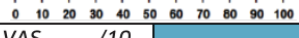
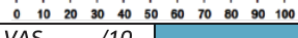
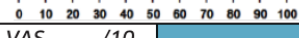
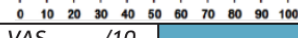
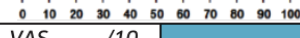


The athlete is asked to estimate experience of insecurity and pain on a VAS-scale from 0 to 100.

(Askling et al 2010)

HAMSTRING PROTOCOL Daily assessments

Injured leg: ☐ LEFT ☐ RIGHT No = no pain, P = pain, NA = not able, SLR = straight leg raise, MHFAKE = maximal hip flexion active knee extension, ° = degrees, kg = kilograms

	/ / 201_ Days Post: Sign:		/ / 201_ Days Post: Sign:		/ / 201_ Days Post: Sign:		/ / 201_ Days Post: Sign:		/ / 201_ Days Post: Sign:	
	INJURED	UNINJURED	INJURED	UNINJURED	INJURED	UNINJURED	INJURED	UNINJURED	INJURED	UNINJURED
Self-reported readiness										
Average pain today	VAS /10		VAS /10		VAS /10		VAS /10		VAS /10	
Walking	No P NA		No P NA		No P NA		No P NA		No P NA	
Jogging	No P NA		No P NA		No P NA		No P NA		No P NA	
2 leg squat x 3	No P NA		No P NA		No P NA		No P NA		No P NA	
1 leg squat x 3	No P NA		No P NA		No P NA		No P NA		No P NA	
Trunk flexion	No P NA		No P NA		No P NA		No P NA		No P NA	
Total palp. length:	cm P		cm P		cm P		cm P		cm P	
Mid range	kg P no	kg	kg P no	kg	kg P no	kg	kg P no	kg	kg P no	kg
Outer range	kg P no	kg	kg P no	kg	kg P no	kg	kg P no	kg	kg P no	kg
SLR	° P no	°	° P no	°	° P no	°	° P no	°	° P no	°
MHFAKE	° P no	°	° P no	°	° P no	°	° P no	°	° P no	°
Bent leg bridge 3x	No P NA		No P NA		No P NA		No P NA		No P NA	
Straight leg bridge 3x	No P NA		No P NA		No P NA		No P NA		No P NA	
Comments:										
	/ / 201_ Days Post: Sign:		/ / 201_ Days Post: Sign:		/ / 201_ Days Post: Sign:		/ / 201_ Days Post: Sign:		/ / 201_ Days Post: Sign:	
	INJURED	UNINJURED	INJURED	UNINJURED	INJURED	UNINJURED	INJURED	UNINJURED	INJURED	UNINJURED
Self-reported readiness										
Average pain today	VAS /10		VAS /10		VAS /10		VAS /10		VAS /10	
Walking	No P NA		No P NA		No P NA		No P NA		No P NA	
Jogging	No P NA		No P NA		No P NA		No P NA		No P NA	
2 leg squat x 3	No P NA		No P NA		No P NA		No P NA		No P NA	
1 leg squat x 3	No P NA		No P NA		No P NA		No P NA		No P NA	
Trunk flexion	No P NA		No P NA		No P NA		No P NA		No P NA	
Total palp. length:	cm P		cm P		cm P		cm P		cm P	
Mid range	kg P no	kg	kg P no	kg	kg P no	kg	kg P no	kg	kg P no	kg
Outer range	kg P no	kg	kg P no	kg	kg P no	kg	kg P no	kg	kg P no	kg
SLR	° P no	°	° P no	°	° P no	°	° P no	°	° P no	°
MHFAKE	° P no	°	° P no	°	° P no	°	° P no	°	° P no	°
Bent leg bridge 3x	No P NA		No P NA		No P NA		No P NA		No P NA	
Straight leg bridge 3x	No P NA		No P NA		No P NA		No P NA		No P NA	
Comments:										

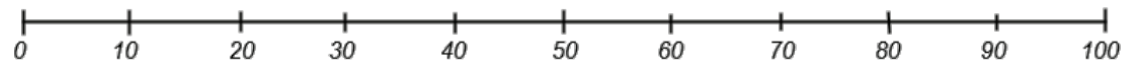
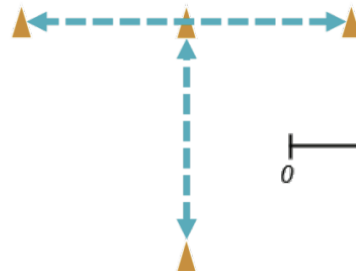
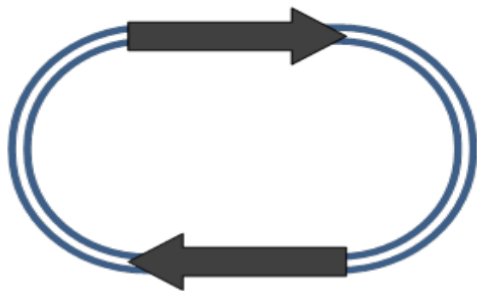
HAMSTRING PROTOCOL

Running Progression

Patient label

Leg injured: ☐ LEFT ☐ RIGHT

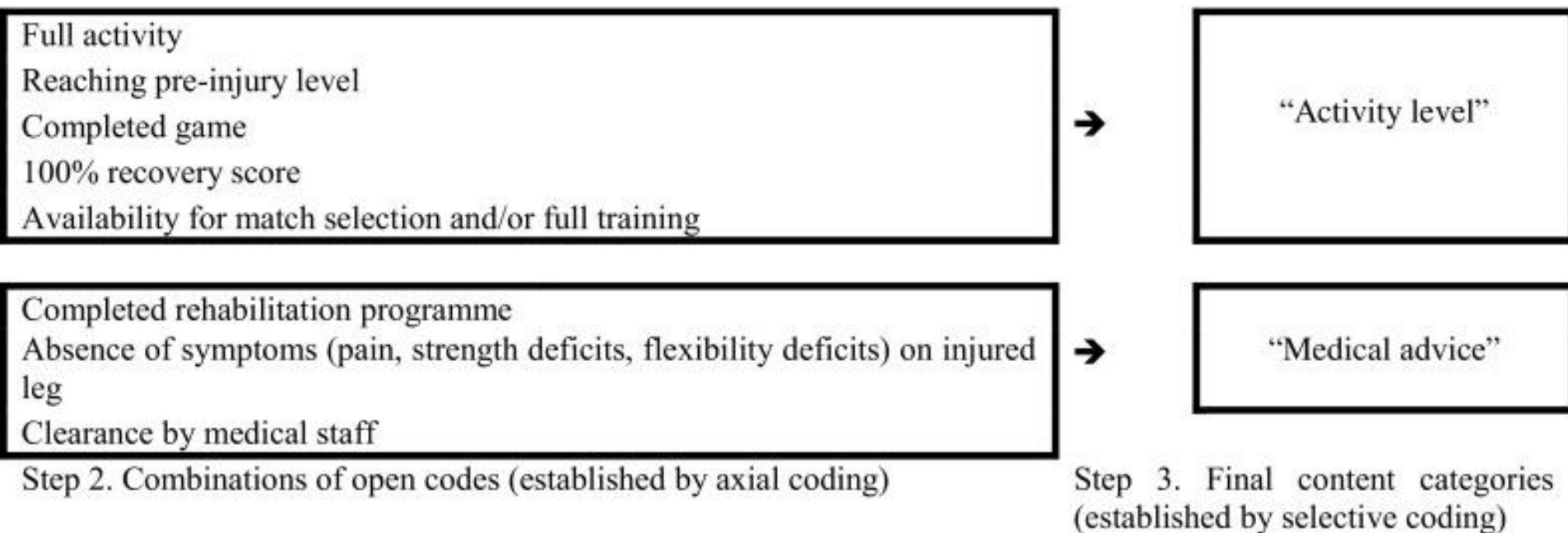
WEEK:			Date Sign: / / 201_			Date Sign: / / 201_			Date Sign: / / 201_			Date Sign: / / 201_			Date Sign: / / 201_			Date Sign: / / 201_			Date Sign: / / 201_		
STAGE	PREPARATION EXERCISES	SETS/LAPS	Sets/Laps			Sets/Laps			Sets/Laps	Best Time % max		Sets/Laps			Sets/Laps			Sets/Laps			Sets/Laps		
2+3	Triple Extension Walk High knee only (Each lap = 100m x2)	3 x 1																					
2+3	“A” Drill High knee with “Kicks” (Each lap = 100m x2)	3 X 1																					
	RUNNING ROGRESSION	SETS/LAPS	Sets/Laps	Best Time	% max	Sets/Laps	Best Time	% max	Sets/Laps	Best Time	% max	Sets/Laps	Best Time	% max	Sets/Laps	Best Time	% max	Sets/Laps	Best Time	% max	Sets/Laps	Best Time	% max
2+3	Walk – Jog (10 -70%) Jog –Run (70 - 100%)	3 x 4																					
3	Timing		Set I: Set II: Set III:			Set I: Set II: Set III:			Set I: Set II: Set III:			Set I: Set II: Set III:			Set I: Set II: Set III:			Set I: Set II: Set III:			Set I: Set II: Set III:		
3	Modified T-Drill (70 – 100%) (≤ 11 sec.)	3 x 1																					
	Timing		Set I: Set II: Set III:			Set I: Set II: Set III:			Set I: Set II: Set III:			Set I: Set II: Set III:			Set I: Set II: Set III:			Set I: Set II: Set III:			Set I: Set II: Set III:		
	Comments																						
	PROGRESSION	Walk – Jog: Begin running at 10-25% (patient-rated), progression by 10% step to max.70%. Jog – Run and Modified T-Drills: Begin running at 70% (patient-rated), progress as able by 10%. At 90%, progress by 5%.																					



What is Return-To-Play (RTP)?

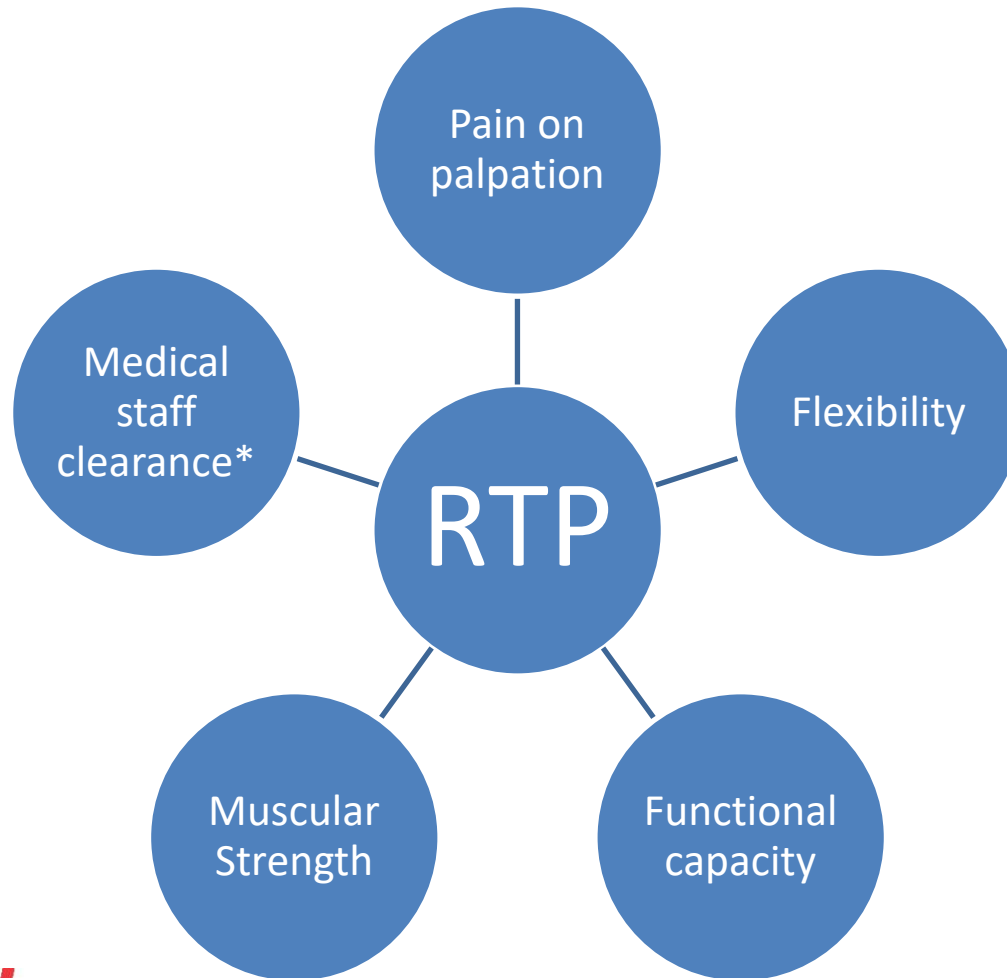
**RTP is a multifactorial process of returning an injured athlete back to competition
where risk of re-injury is minimized**

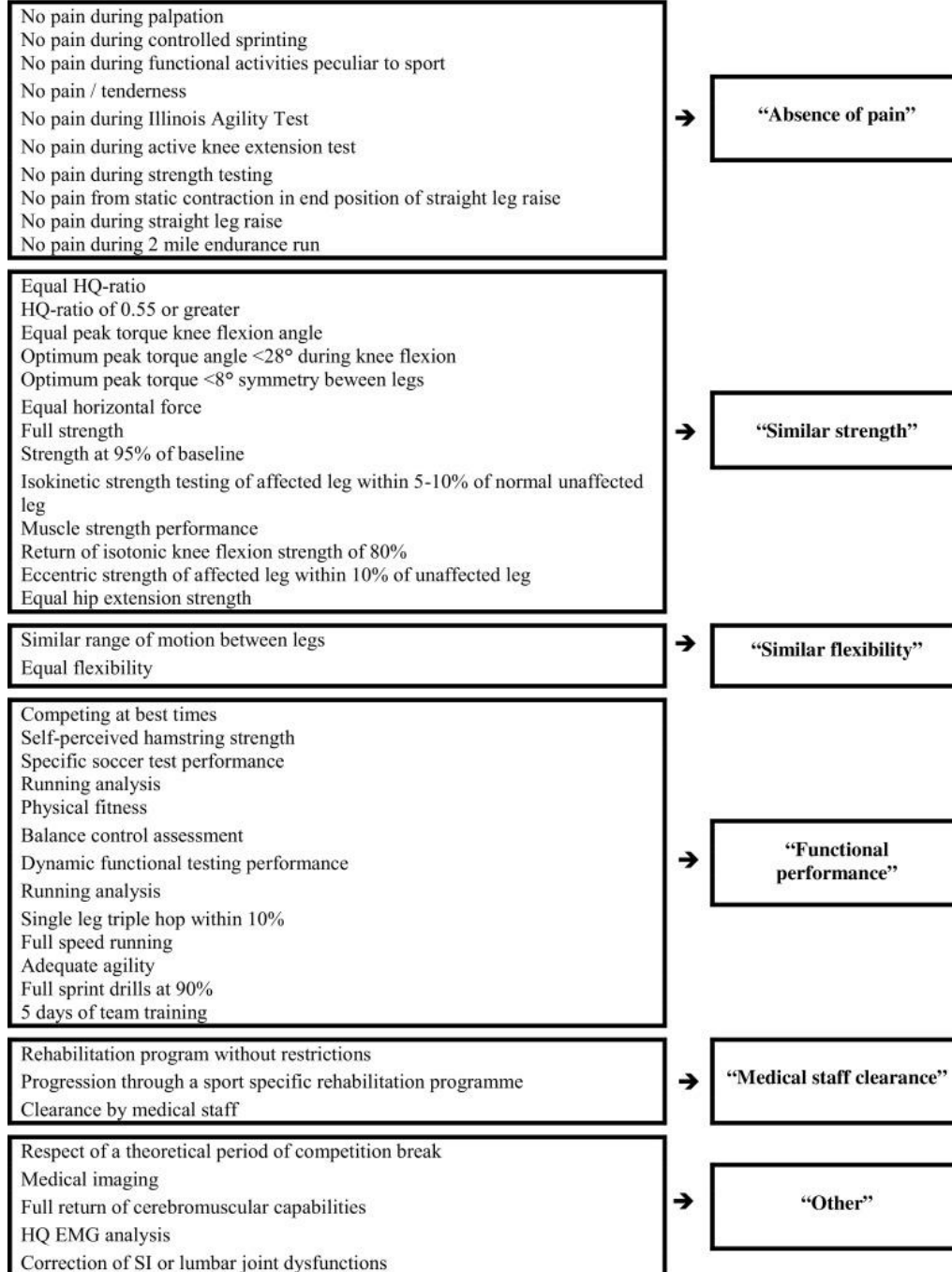
(Menta et al., 2016)



Van der Horst et al., 2016)

Return-To-Play (RTP): Factors to consider





Step 2. Combinations of open codes (established by axial coding)

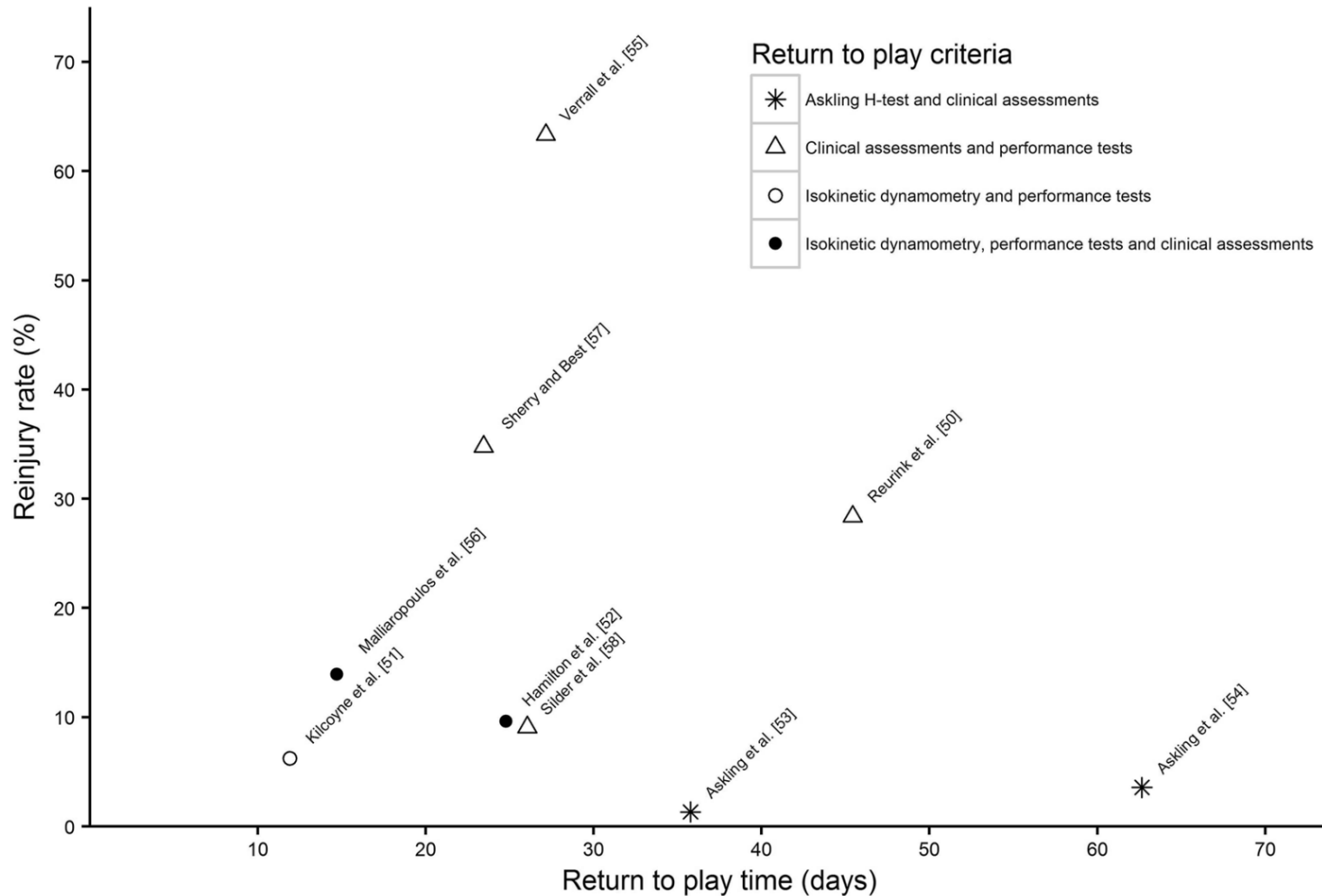
Step 3. Final content categories (established by selective coding)

(Van der Horst et al., 2016)

Ranking	Return-to-play criteria
1	Complete pain relief
2	Muscle strength performance
3	Subjective feeling reported by the player
4	Muscle flexibility
5	Specific soccer test performance
6	Respect of a theoretical period of competition break
7	Running analysis
8	Physical fitness
9	Balance control assessment
10	Medical imaging
11	Dynamic functional testing performance
12	Correction of potential sacroiliac or lumbar joint dysfunction
13	Other
14	Quadriceps – Hamstrings EMG analysis

Delvaux et al.,
(2014)

RTP times and re-injury rates



Bullet-proofing the Hamstrings: Practical strategies

The 11+

PART 1 RUNNING EXERCISES • 8 MINUTES



1 RUNNING STRAIGHT AHEAD

The coach instructs up to 6 to 10 pairs of opposite cones, approx. 4-6 m apart. Two players start at the same time from the first pair of cones. **Jog together** all the way to the last pair of cones. On the way back, you can increase your speed progressively as you warm up. **2 sets**



4 RUNNING CIRCLING PARTNER

Run forwards as one to the first pair of cones. Shuffle sideways by 90 degrees to meet in the middle. **Shuffle** an entire circle around one other and then return back to the cones. Repeat for each pair of cones. Remember to stay on your toes and keep your centre of gravity low by bending your hips and knees. **2 sets**



2 RUNNING HIP OUT

Walk or jog, stepping at each pair of cones to lift your knees and make your hip outwards. Alternate between left and right legs at successive cones. **2 sets**



5 RUNNING SHOULDER CONTACT

Run forwards as one to the first pair of cones. Shuffle sideways by 90 degrees to meet in the middle then **jump sideways towards each other to make shoulder-to-shoulder contact**. Remember to stay on your toes and pull your arms in. Lift each leg in turn, holding for a count of 2 sec. Continue for 40-60 sec. Your body should be in a straight line. Try not to sway or arch your back. **3 sets**



3 RUNNING HIP IN

Walk or jog, stepping at each pair of cones to lift your knees and make your hip inwards. Alternate between left and right legs at successive cones. **2 sets**



6 RUNNING QUICK FORWARDS & BACKWARDS

As a pair, see quickly to the second set of cones then **run backwards quickly to the first pair of cones keeping your hips and knees slightly bent**. Keep repeating the drill, moving the cones forwards and one cone backwards. Remember to take small, quick steps. **2 sets**

PART 2 STRENGTH • PLYOMETRICS • BALANCE • 10 MINUTES

LEVEL 1



7 THE BENCH STATIC

Starting position: Lie on your front, supporting yourself on your forearms and feet. Your elbows should be directly under your shoulders. **Exercise:** Lift your body up so that your head, shoulders, hips and ankles are in a straight line. Hold the position for 20-30 sec. Your body should be in a straight line. Try not to sway or arch your back. **3 sets**



8 SIDEWAYS BENCH STATIC

Starting position: Lie on your side with the knee of your innermost leg bent to 90 degrees. Support your upper body by resting on your forearm and knee. The elbow of your innermost arm should be directly under your shoulder. **Exercise:** Lift your uppermost leg and your shoulder, hip and knee until in a straight line. Hold the position for 20-30 sec. Take a short break, change sides and repeat. **3 sets** on each side.



9 HAMSTRINGS BEGINNER

Starting position: Kneel on a soft surface. Ask your partner to hold your ankles down firmly. **Exercise:** Your body should be completely straight from the shoulder to the knee throughout the exercise. Lean forward until you can, controlling the movement with your hamstrings and your gluteal muscles. When you can no longer hold the position, gently take your weight on your hands, falling into a push-up position. Complete a minimum of 3-5 repetitions and/or 60 sec. **1 set**



10 SINGLE-LEG STANCE HOLD THE BALL

Starting position: Stand on one leg. **Exercise:** Balance on one leg while holding the ball with both hands. Keep your feet weight on the ball of your foot. Remember, try not to let your knees buckle inwards. Hold for 30 sec. Change legs and repeat. The exercise can be made more difficult by passing the ball around your waist and/or under your other knee. **2 sets**



11 SQUATS WITH TOE RAISE

Starting position: Stand with your feet hip-width apart. Place your hands on your hips if you like. **Exercise:** Imagine that you are about to sit down on a chair. Perform a squat by your heels and your hips and knees. Do not let your knees buckle inwards. Descend slowly then straighten up more quickly. When your legs are completely straight, stand up on your toes then slowly lower down again. Repeat the exercise for 30 sec. **2 sets**



12 JUMPING VERTICAL JUMPS

Starting position: Stand with your feet hip-width apart. Place your hands on your hips if you like. **Exercise:** Imagine that you are about to sit down on a chair. Bend your legs slowly until your knees are flexed to approx. 90 degrees, and hold for 2 sec. Do not let your knees buckle inwards from the front position. Jump up as high as you can. Land softly on the balls of your feet with your hips and knees slightly bent. Repeat the exercise for 30 sec. **2 sets**



LEVEL 2

7 THE BENCH ALTERNATE LEGS

Starting position: Lie on your front, supporting yourself on your forearms and feet. Your elbows should be directly under your shoulders. **Exercise:** Lift your body up so that your head, shoulders, hips and ankles are in a straight line. Hold the position for 20-30 sec. Continue for 40-60 sec. Your body should be in a straight line. Try not to sway or arch your back. **3 sets**



8 SIDEWAYS BENCH RAISE & LOWER HIP

Starting position: Lie on your side with both legs straight. Lean on your forearm and the ball of your foot so that your body is in a straight line from shoulder to foot. The elbow of your supporting arm should be directly under your shoulder. **Exercise:** Lower your hip to the ground and raise it back up again. Repeat for 20-30 sec. Take a short break, change sides and repeat. **3 sets** on each side.



9 HAMSTRINGS INTERMEDIATE

Starting position: Kneel on a soft surface. Ask your partner to hold your ankles down firmly. **Exercise:** Your body should be completely straight from the shoulder to the knee throughout the exercise. Lean forward until you can, controlling the movement with your hamstrings and your gluteal muscles. When you can no longer hold the position, gently take your weight on your hands, falling into a push-up position. Complete a minimum of 7-10 repetitions and/or 60 sec. **1 set**



10 SINGLE-LEG STANCE THROWING BALL WITH PARTNER

Starting position: Stand 2-3 m apart from your partner, with each of you standing on one leg. **Exercise:** Throw the ball, and with your partner's help, throw the ball to one another. Keep your weight on the ball of your foot. Remember, keep your knees just slightly flexed and try to not let it buckle inwards. Repeat going for 30 sec. Change legs and repeat. **2 sets**



11 SQUATS WALKING LUNGES

Starting position: Stand with your feet hip-width apart. Place your hands on your hips if you like. **Exercise:** Lunge forward slowly at an even pace. As you descend, bend your back knee and your front knee. Do not let your knees buckle inwards. Do not let your knee buckle inwards. Descend slowly then straighten up more quickly. When your legs are completely straight, stand up on your toes then slowly lower down again. Repeat the exercise for 30 sec. **2 sets**



12 JUMPING LATERAL JUMPS

Starting position: Stand on one leg with your upper body bent slightly towards the wall, with knees and hips slightly bent. **Exercise:** Jump sideways to the wall, with knees and hips slightly bent. Land gently on the ball of your foot. Bend your upper body and hips and do not let your knees buckle inwards. Repeat the exercise until you reach the other side of the pitch. Repeat the exercise for 30 sec. **2 sets**



LEVEL 3

7 THE BENCH ONE-LEG LIFT AND HOLD

Starting position: Lie on your front, supporting yourself on your forearms and feet. Your elbows should be directly under your shoulders. **Exercise:** Lift your body up so that your head, shoulders, hips and ankles are in a straight line. Hold the position for 20-30 sec. Your body should be in a straight line. Try not to sway or arch your back. **3 sets**



8 SIDEWAYS BENCH WITH LEG LIFT

Starting position: Lie on your side with both legs straight. Lean on your forearm and the ball of your foot so that your body is in a straight line from shoulder to foot. The elbow of your supporting arm should be directly under your shoulder. **Exercise:** Lift your uppermost leg up and slowly lower it down again. Repeat for 20-30 sec. Take a short break, change sides and repeat. **3 sets** on each side.



9 HAMSTRINGS ADVANCED

Starting position: Kneel on a soft surface. Ask your partner to hold your ankles down firmly. **Exercise:** Your body should be completely straight from the shoulder to the knee throughout the exercise. Lean forward until you can, controlling the movement with your hamstrings and your gluteal muscles. When you can no longer hold the position, gently take your weight on your hands, falling into a push-up position. Complete a minimum of 12-15 repetitions and/or 60 sec. **1 set**



10 SINGLE-LEG STANCE TEST YOUR PARTNER

Starting position: Stand on one leg opposite your partner and at arm's length apart. **Exercise:** Urge both of you to keep your balance, each of you in turn, to push the other off balance in different directions. Try to keep your weight on the ball of your foot and prevent your knee from buckling inwards. Continue for 30 sec. Change legs and repeat. **2 sets**



11 SQUATS ONE-LEG SQUATS

Starting position: Stand on one leg, lower holding onto your partner. **Exercise:** Slowly bend your knee as far as you can manage. Concentrate on your back knee bending forward and backwards. Bend your knee slowly then straighten it slightly more quickly, keeping your hips and upper body in line. Repeat the exercise 10 times on each leg. **2 sets**



12 JUMPING BOX JUMPS

Starting position: Stand with your feet hip-width apart. Imagine that there is a stone marked on the ground and you are standing in the middle of it. **Exercise:** Jump 10 cm above the ground, landing with your feet close to the stone, and diagonally across the cross, jump as quickly and explosively as possible. Do not let your knees buckle inwards. Do not let your knees buckle inwards. Do not let your knees buckle inwards. Repeat the exercise for 30 sec. **2 sets**

PART 3 RUNNING EXERCISES • 2 MINUTES



13 RUNNING ACROSS THE PITCH

Run across the pitch, from one side to the other, at 75-80% maximum pace. **2 sets**



14 RUNNING BOUNDING

Run with high bounding steps with a high knee lift, landing gently on the ball of your foot. Use an exaggerated arm swing for each step (opposite arm and leg). Try not to let your leading leg cross the middle of your body or let your knees buckle inwards. Repeat the exercise until you reach the other side of the pitch, then jog back to recover. **2 sets**



15 RUNNING PLANT & CUT

Jog 4-5 steps, then plant on the outside leg and cut to change direction. Accelerate and sprint 5-7 steps at high speed (80-90% maximum pace) before you decelerate and do a new plant & cut. Do not let your knees buckle inwards. Repeat the exercise until you reach the other side, then jog back. **2 sets**



KNEE POSITION CORRECT












KNEE POSITION INCORRECT



The FIFA11+
warm up
program
reduced
injury risk in
soccer players
by 30%

WARM UP | PREPARE TO PERFORM | Before Every Training + Match – 8-10 minutes (Complete all Exercises)

	RUNNING STRAIGHT AHEAD Increase speed on the second set. 2 sets.		RUNNING HIP OUT Keep controlled through the whole movement. 2 sets.		RUNNING HIP IN Keep controlled through the whole movement. 2 sets.
	RUNNING CIRCLING PARTNER Stay on the toes, with hips & knees bent. 2 sets.		RUNNING SHOULDER CONTACT Land softly, don't let knees buckle in 2 sets.		RUNNING QUICK FORWARDS & BACKWARDS Control accel & decel, small quick steps. 2 sets.
	RUNNING BUILDING SPEED Build to 75-80% speed. 2 sets.		RUNNING BOUNDING Knees high & "spring". 2 sets.		RUNNING PLANT & CUT Knees inline with hips & ankles, don't let knees buckle in. 2 sets.

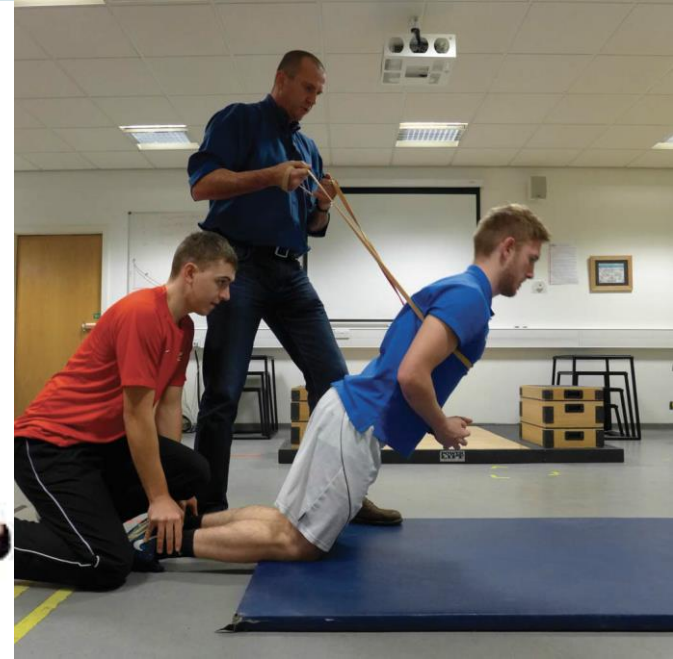
PERFORMANCE | STRENGTH - BALANCE - POWER | Perform at Training or Home - 5 minutes (Complete all Exercises 2 to 3x/week)

LEVEL 1	LEVEL 2	LEVEL 3
 THE BENCH STATIC Keep the body & head straight. 3 sets x 20-30secs.	 THE BENCH ALTERNATE LEGS Lift each leg and hold for 2 secs, continue for 40-60 secs, perform 3 sets.	 THE BENCH ONE LEG LIFT AND HOLD Lift each leg and hold for 2 secs, continue for 40-60 secs, perform 3 sets.
 SIDEWAYS BENCH STATIC Hold position for 20-30secs. Repeat 3x each side.	 SIDEWAYS BENCH RAISE & LOWER HIP Controlled hip lower to ground and raise up. 3 x 20-30secs each side.	 SIDEWAYS BENCH ONE LEG LIFT Lift and lower the upper most leg slowly for 20-30secs. Repeat x 3 each side.
 SINGLE-LEG STANCE HOLD THE BALL Don't let the knee buckle in, you can move the ball around the body. Hold for 30secs x 2.	 SINGLE-LEG STANCE THROW BALL TO PARTNER Weight on the ball of the foot & prevent knee from buckling in. 2 x 30secs.	 SINGLE-LEG STANCE TEST YOUR PARTNER Weight on the ball of the foot & prevent knee from buckling in. 2 x 30secs.
 JUMPING VERTICAL JUMPS Do not let the knees buckle inwards, land "softly". 2 sets x 30secs.	 JUMPING LATERAL JUMPS Do not let the knees buckle inwards, land "softly". 2 sets x 30secs.	 JUMPING BOX JUMPS Do not let the knees buckle inwards, land "softly". 2 sets x 30secs.

COOLDOWN | PERFORMANCE - RESILIENCE | Perform at the End of Training or Home – 5 minutes (Complete all Exercises 2 to 3x/week)

LEVEL 1	LEVEL 2	LEVEL 3
 HAMSTRINGS BEGINNER Trunk straight, lower as slowly as possible. Start 1 set x 3-5. Progress to 1 set x 8-10.	 HAMSTRINGS INTERMEDIATE Trunk straight, lower as slowly as possible. Progress to 2 sets x 6-8.	 HAMSTRINGS ADVANCED Trunk straight, lower as slowly as possible. Progress to 3 sets x 8-10.
 QUADRICEPS WITH TOE RAISE Don't let the knees buckle, legs completely straighten. 2 sets x 30secs.	 QUADRICEPS WALKING LUNGES Ensure knees do not go over toes, balance between steps. 2 sets x 10 each leg.	 QUADRICEPS ONE-LEGGED SQUATS Don't let knee buckle in, bend knee slowly, straighten quickly. 2 sets x 10 each leg.
 GROIN/ADDUCTORS LEVEL 1 Lift bottom leg. Hold for 4-5secs. Start 1 set x 3-5 reps. Progress to 8-10 reps.	 GROIN/ADDUCTORS LEVEL 2 Top leg steady, slow lower leg movement. Start 1 set x 3-5 reps. Progress to 1 set x 7-10 reps.	 GROIN/ADDUCTORS LEVEL 3 3-4 sec controlled lowering and lifting of the pelvis. Start 1 set x 3-5 reps. Progress to 1 x 12-15 reps.

Training exercises: Rehabilitation/Prehabilitation



Training exercises: Advance



Warm up construction

Group 1: Swimming

Group 2: Basketball

Group 3: Volleyball

Group 4: Combat Sports (TKD/Wushu/Karate)

Group 5: Cricket

Group 6: Floorball/Hockey

Group 7: Racket sports

General warm-up/prehab template

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Questions