

Return-to-Play after a grade 2B Hamstring injury

No GPS, no problem!



PART I: Understanding players/positions VHI profiles and how to achieve those distances

Match VHI profiles in different professional levels

Position	Average VHI distance ($\geq 5,5$ m/s) Covered During a Match	
	English Premier League	Average-level professional Team*
Central Defenders	680 m	450 m
Fullbacks	910 m	700 m
Central Midfielder	930 m	600 m
Wide Midfielder	1050 m	750 m
Attacker	970 m	650 m
Average	900 m	630 m

Distance covered in VHI considering the drill length and time taken to perform it

Drill Linear Distance	Time spent in the drill	Average Speed	Approximate distance covered in VHI
30 m	5 s	6 m/s	20 m without achieving sprint distance
30 m	4 s	7,5 m/s	20 m achieving sprint distance
40 m	6 s	6,6 m/s	30 m without achieving sprint distance
40 m	5 s	8 m/s	30 m achieving sprint distance
50 m	8 s	6,3 m/s	40 m without achieving sprint distance
50 m	7 s	7,1 m/s	40 m achieving sprint distance
60 m	10 s	6 m/s	50 m without achieving sprint distance
60 m	8 s	7,5 m/s	50 m achieving sprint distance

* Unpublished Data



Rule of Thumb



- For a maximal intent on acceleration, on average, a player takes 10 m to achieve 5,5 m/s and start covering distance in VHI
- Thus, in a 50 m acceleration drill, a player will cover, on average, 40 m of VHI distance

±10 m to achieve 5,5 m/s

± 40 m covered in VHI ($\geq 5,5$ m/s)

50 m drill

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PART II: Understanding when to start, how to induce, periodize and progress in VHI goals

Clinical Criteria to start RTP stage

⚠️ No pain in any test and/or functional activity ⚠️ Full ROM ⚠️ Hamstring strength deficit ≤ 15%* ⚠️ Hamstring/Quadriceps Functional Ratio ≥ 1,3* ⚠️ RSI deficit ≤ 15%*

RTP Session		VHI progression during a grade 2b hamstring injury rehabilitation taking in consideration an average match VHI profile of 630 meters (m)											
		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12
FIELD	VHI distance Progression	0-10% Match Average	N/A	30% Match Average	N/A	N/A	60% Match Average	N/A	N/A	100% Match Average	N/A	N/A	START TRAINING WITH TEAM
	VHI distance goal	0 - 63 m without sprint distance	N/A	190 m without sprint distance	N/A	N/A	380 m "touching" sprint distance	N/A	N/A	630 m achieving maximum speed	N/A	N/A	
	VHI Content	VHI Exploratory Session <ul style="list-style-type: none"> Technical Drills w/ length below 30 m to avoid covering considerable amount of VHI distances but allowing the player to achieve it if comfortable 	Off	VHI Drills <ul style="list-style-type: none"> 2x(4x30m) in 5s + 1x40m in 6s 30s active/passive rest between repetitions and 3 min between sets 	Off	Off	VHI Drills <ul style="list-style-type: none"> 2x(4x40m) in 6s + 2x50m in 6s + 2x40m in 5s - achieve sprint speed 30s active/passive rest between repetitions and 3 min between sets 	Off	Off	VHI Drills w/ maximal intent <ul style="list-style-type: none"> 2x(3x50m) in ≤ 8s + 1x50m in < 7s + 1x(4x60m) in ≤ 10s + 1x(3x60m) in ≤ 8s 30-40s active/passive rest between repetitions and 2-3 min between sets 	Off	Off	
Gym after field if applicable	Core Stability	Recovery Strategies unloading legs	Legs Maximum Strength Training	Upper-Body	Core Stability	Recovery Strategies unloading legs	Upper-Body	Core Stability	Legs Maximum Strength Training	Upper-Body	Core Stability		

Sessions may be complemented with **Technical and Strength Drills** to:

- 1) add training volume;
- 2) explore technical/tactical skills/demands;
- 3) induce accelerations and decelerations stimulus.

GLOSSARY

RTP - Return-to-Play; **VHI** - Very High Intensity distance; **VHI distance** - distance covered at ≥ 5,5 m/s; **Sprint Distance** - distance covered at ≥ 7 m/s; **Technical Drills** - performed to explore technical skills of the player considering his tactical/technical demands in the field; **VHI Drills** - performed with the goal to achieve VHI distance, usually longer than 20 m between events; **Strength Drills** - performed with the goal to achieve accelerations and decelerations, incorporating changing of directions. Usually not longer than 15 m between cones (events).

* Assessment performed with Isokinetic Dynamometer and Contact mat, for alternatives check our article regarding ACL rehabilitation and running initiation.