

Supplementary Appendix to:

***PRP Does Not Enhance Return to Play Duration in Acute Hamstring Injuries When
Compared with Intensive Rehabilitation: A Randomised Controlled Trial***

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Table S1 Standardized criteria-based rehabilitation programme for hamstring injury[1]

Stage	Content	Criteria to progress
Stage 1	<p><i>All activity to be pain-free</i></p> <p>2 leg squat, or if able, Single leg squat Maintain pelvis control, hip and knee alignment, Squat to 45°, hold, return to start.</p> <p>Supine Bridge – 2 leg 2 sec up, 2 sec down (4 sec total per rep.) Begin at 45°. Must reach knee-hip-shoulder in alignment. 4 X 15</p> <p>Supine Isometric Heel digs In supine, painlessly pull heel into bed through range. Can bias with tibial IR/ER when painless.</p> <p>Exercise Bike Upright or recumbent, can substitute with elliptical trainer.</p> <p>Isometric manual resisted hamstring Therapist applied resistance isometrically in varying angles in prone.</p> <p>Soft tissue massage Proximal and distal to injury site, lymphatic drainage.</p> <p>Active range of motion exercises Supine active knee flexion & extension then Prone active flexion & extension.</p>	<p><i>Criteria to progress to Stage 2:</i></p> <ol style="list-style-type: none"> 1. Painless Single Leg Squat. 2. Painless Bike, 150W 5 minutes. 3. Full Knee Extension Supine.
Stage 2	<p><i>Any exercise from Stage 1 permitted, additionally:</i></p> <p>Supine Bridge - 1 leg Same rate as for 2 legs, other knee in full Extension, thighs parallel throughout exercise. 4 X 15</p> <p>Walk-Jog Walk 20m corners, jog the 30m straight, painless. Begin at 25% (self-rated) jog, progress to max 70%.</p> <p>Triple Extension Walk 100m laps, every third step triple extension – i.e. alternating legs.</p> <p>“A” drill Walking late swing knee extension, painless. Alternating legs, 100m lap.</p> <p>Soft tissue massage Can massage injured area. Maximum allowed pain VAS: 4/10. Therapist uses caution with any report of discomfort, monitor symptoms, adjust accordingly.</p> <p>Stretching <u>Hamstring</u> (supine, 90° hip Flexion, knee Extension); <u>SLR</u> (Supine to onset of discomfort add ankle DF) Initially active, patient-controlled, progress to passive, end range. SLR mobilisation if indicated.</p> <p>Resisted hamstring Note tibial rotation as indicated. 4 X 15 repetitions, aiming for fatigue</p>	<p><i>Criteria to progress to Stage 3:</i></p> <ol style="list-style-type: none"> 1. Run ≥ 70% Patient-rated. 2. ROM Hamstrings ≥ 75% uninvolved side. 3. ROM SLR ≥ 75% uninvolved side.

Stage 3	<p><i>Any exercises from stages 1 and 2, additionally:</i></p> <p>Single Leg Bridge 1 sec repetition, 2 sec recovery. 4 X 8 repetitions.</p> <p>Single Leg Bridge, foot on Swiss Ball 2 sec up, 2 sec down. 4 X 8 repetitions.</p> <p>Interval running 20m jog 30m run. Begin running at 70% (patient rated), progressing by 10% steps, painlessly. At 90%, progress by 5%. Monitor performance by hand timing.</p> <p>Modified T-Drill Direction changing running over T-Drill course. Begin at patient-rated 70%, progress as able by 10% until 90%, then by 5%. Monitor performance by hand timing.</p> <p>Eccentric Exercises Nordic Hamstrings, manual resisted eccentric, prone catches, Arabesque (single leg stance, trunk flexion),</p>	<p><i>Criteria to progress to Stage 4 (Sport Specific Rehab):</i></p> <ol style="list-style-type: none"> 1. 100% running speed. 2. Painless high speed direction changes.
Stage 4	<p><i>Any exercises from stages 1-3, additionally on-field, football specific drills:</i></p> <p>Direction Change drills With and without the ball, 40 mins</p> <p>Jumping drills 10-15 minutes</p>	<p><i>Criteria to progress to Stage 5 (Sport Specific Rehab):</i></p> <ol style="list-style-type: none"> 1. Painless completion of stage 4.
Stage 5	<p>Passes and run</p> <p>Long passes progression</p> <p>Crosses (static)</p> <p>Corner Kicks</p> <p>Crosses (dynamic)</p>	<p><i>Criteria to progress to Stage 6 (Sport Specific Rehab):</i></p> <ol style="list-style-type: none"> 1. Painless completion of stage 5.
Stage 6	<p>Passes and run</p> <p>Shooting scenarios</p> <p>Competitive 1 versus 1 drills</p> <p>Shooting scenarios</p> <p>Scoring scenarios</p>	<p><i>Criteria to progress to medical review for return to sport:</i></p> <ol style="list-style-type: none"> 1. Painless completion of stage 6.

Abbreviations: IR = internal rotation; ER = external rotation; SLR = straight leg raise; sec = second; ROM = range of motion; DF = dorsiflexion; Modified T-Drill = (Always) forward running over the course of the Agility T-Test

Table S2 Characteristics of patients not available for the primary outcome measure RTS. Retrospectively scored estimated RTS are listed, used for 6 months re-injury follow-up but excluded for the analysis for the primary outcome score RTP (unreliable RTP data).

Subject ID	Age	Gender	Sports / level	Outcome	
				score	Course during study period
GF2 (No Injection)	26	Male	Football / Professional	RTP	<p>Stopped with rehabilitation at 38 days (no release for continuing rehabilitation from his workplace) and no show on follow-up with SMP before RTP.</p> <p>Censored at 38 days from injury.</p> <p><i>Retrospectively</i> scored estimated RTP: estimated RTP at 4 months post-injury, while he attended to the clinic for another injury at approximately 5 months post-injury.</p>
GF61 (PRP)	25	Male	Football/ Professional	RTP	<p>Left the country.</p> <p>Censored at 13 days from injury.</p> <p>No Estimated RTP available</p>
GF69 (No Injection)	40	Male	Football /Competitive	RTP	<p>Stopped with rehabilitation at 29 days (non-compliant) and no show on follow-up with SMP.</p> <p>Censored at 29 days from injury.</p> <p><i>Retrospectively</i> scored estimated RTP: reached by telephone at 8 months post-injury; estimated RTP at 2 months.</p>
GF79 (No Injection)	23	Male	Athletics / Professional	RTP	<p>Travelled abroad with his team after 6days - did not complete the rehabilitation protocol and no show on follow-up with SMP.</p> <p>Censored at 6 days from injury</p> <p><i>Retrospectively</i> scored estimated RTP: was reached by telephone at 5 months post-injury; estimated RTP at 3 months post-injury.</p> <p>Car accident at 18 days post injury, unable to continue rehabilitation protocol.</p>
GF80 (PRP)	20	Male	Football / Professional	RTP	<p>Censored at 18 days from injury.</p> <p><i>Retrospectively</i> scored estimated RTP: was reached by telephone at 3 months post-injury; estimated at 2 months post injury</p>

Abbreviations: GF: Growth Factor; RTS: return to sport; SMP: sports medicine physician

Table S3 Characteristics of patients not available for the secondary outcome measure re-injury at 6 months follow-up

Subject ID	Age	Gender	Sports / level	Outcome score	Course during study period
GF17 (PPP)	30	Male	Football / Professional	re-injury	Left the country 4 months after RTP
GF39 (PRP)	26	Male	Futsal / Professional	re-injury	Left the country one month after RTP
GF41 (PRP)	23	Male	Decathlon / Professional	re-injury	Left the country after RTP
GF57 (No injection)	32	Male	Football / Professional	re-injury	Left the country one month after RTP
GF59 (PPP)	25	Male	Football / Professional	re-injury	Left the country 2 months after RTP
GF61 (PRP)	25	Male	Football / Professional	re-injury	Left the country before RTP
GF70 (PRP)	32	Male	Handball/ Professional	re-injury	Left the country 2 months after RTP

Abbreviations: GF: Growth Factor; RTP: return to play

REFERENCES

1. Tol JL, Hamilton B, Eirale C, et al. At return to play following hamstring injury the majority of professional football players have residual isokinetic deficits. *Br J Sports Med* 2014;48:1364-9.