

USING PLATELET-RICH PLASMA IN TREATING MUSCULAR INJURIES

IN PROFESSIONAL FOOTBALL PLAYERS

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INTRODUCTION

The purpose of this research was to assess the results of treatment based on platelet-rich plasma injections administered to professional footballers with muscular injuries. Of the wide variety of football injuries, muscular injuries are arguably the most common ones (1). Among professional players, they constitute up to 12–15% of all injuries suffered during a single season.

Over the course of each competitive season, a team of elite footballers consisting of 25 players may expect 4–6 injuries of hamstring muscles alone – these are the most common football-related injuries (2).

It is necessary to conduct assessments the pain syndrome over the whole course of the treatment but in doing so, the patient must be observed as they are exposed to a gradually increasing specific training load, and those observations are to be taken into account.

Treatment of muscular injuries of any kind in football players can be deemed complete and successful when the criteria below are met:

- absence of limiting discomfort of any degree of intensity;
- full muscular control and ability to compensate for any possible discomfort without having to seek medical assistance when exertion ceases.

Importantly, even the use of MRI and isokinetic testing before the patient is discharged and cleared to rejoin the base team of players does not provide a guarantee against relapse.

The authors have developed and were the first to implement a pain syndrome assessment system producing a point-based score targeted specifically at highly qualified football players.

Pain assessment scale for professional soccer players

1	Performing exercises of any intensity – no pain (after the exercises there is no sense of heaviness in a muscle).
2	Performing exercises of any intensity – no pain (after the exercises there is a sense of heaviness in a muscle).
3	Performing exercises of any intensity – no pain (there is sense of heaviness in muscle in the second part of exercise program).
4	Soccer specific exercises (jumping on a unstable platform (40 cm), jumping down and sprint for 10 meters) – no pain.
5	Soccer specific exercises at medium intensity (running with a ball with a change of direction (speed 15 km/h), change of direction every 10 meters) – no pain.
6	Running at medium intensity (speed 12 km/h) – no pain.
7	Deep palpation – no pain.
8	Fast walking (speed 7 km/h) – no pain.
9	Slow walking (speed 5 km/h) – no pain.
10	Pain at rest and during regular movements.

This scoring scale allows one to make a quick assessment of treatment progress and forecast treatment duration (3).

1		2		3		4		5		6	
06/15/2018 Alan Dzagoev gets a muscle injury		MRI immediately after injury		Using platelet-rich plasma in treating muscular injuries		Recovery Training Course		MRI before going to RTA		06/26/2018 Russia-Croatia game at the World Cup	

METHODS

The technique described above was used to summarize treatment results of 18 players from Russia's national football team over the period of 2012 through 2017.

According to the classification provided by the British Athletics association, all the injuries were graded minor to moderate (1b–2b). All diagnoses were verified using ultrasound imaging and MRI. The milestone corresponding to treatment cessation was set at reaching a score of 1–2 pts using the scoring scale proposed.

Therapy included:

- single platelet-rich plasma (PRP) injections controlled with ultrasound imaging;
- cryotherapy (in the first 24–48 hrs of treatment, sessions of 20 minutes 6–7 times a day);
- single sessions after workouts, training practice, and games);
- physiotherapy (electromagnetic therapy and electrical miostimulation).
- PRP was obtained using a centrifuge (BTI, Spain) following the standard procedure.

The patients were injected with 8–10 ml of PRP containing 650,000– 700,000 platelets per 1 ml.

The most frequent injuries affected:

- 5 cases** The adductor magnus
Grades 1b–2a, 3–6 days to clearance to rejoin the base team.
- 4 cases** The gastrocnemius muscle
Grades 1b–2b, 3–8 days to clearance to rejoin the base team.
- 7 cases** The hamstring group muscles
Grades 1b–2b, 2–8 days to clearance to rejoin the base team.
- 1 cases** The pectineus muscle
Grade 2a, 3 days to clearance to rejoin the base team.

The criterion for granting clearance to rejoin the base team was scoring 1–2 pts against the scale developed by the authors. Within 3 months of rejoining the base group of players, none of the patients had a relapse of their injury.

RESULTS

Treatment 3-8 days

Following a course of conservative therapy, all footballers returned to their normal regular training activities in the minimum time frame possible. None of the cases was marked by complications during treatment. Treatment lasted 3-8 days.

Monitoring 3 months

In all cases, treatment outcomes were monitored over the course of 3 months following treatment cessation, and in none of the cases any limitations to the players' professional activity due to problems in the previously injured region were identified.

Prophylactic 2 times a week

All the footballers in the study continue to do specially designed sets of physical exercises as a preventative measure against any possible relapses 2 times a week, with trainings lasting 15–20 minutes.

CONCLUSIONS

Thus, minor to moderate muscular injuries of lower extremities can be successfully treated using a complex of therapeutic measures combined with PRP therapy, in the shortest time possible allowing professional football players to return to their specific physical activities at any level, not excluding taking part in matches of high importance for the tournament.

References
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