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Injectable Orthobiologics in Professional Football (Soccer) Players: A Systematic Review

Author/s:

Theodorakys Marín Fermín, MD

Emmanouil Papakostas, MD, FEBSM

Luca Macchiarola, MD

Frantzeska Zampeli, MD, PhD

Georgios Kalifis, MD

Laura de Girolamo, PhD

Bashir Zikria, MD MSc.

Miguel Angel Khoury, MD

Pieter D'Hooghe, MD PhD





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DISCLOSURES:

The authors declare having no conflicts of interest.



INTRODUCTION

The use of orthobiologics in the treatment of sports injuries has increased because of athletes' desire to heal faster and early return to sports. These therapies comprise platelet-rich plasma (PRP), bone marrow aspirate concentrate (BMAC), and mesenchymal stem cells (MSCs) injections which promote the native musculoskeletal system healing and regeneration potential.



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OBJECTIVE

To evaluate the clinical outcomes of PRP, BMAC, and MSCs injections in treating sport-related injuries for professional football (PF) players.



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METHODS

Following the PRISMA guidelines, PubMed, Embase, Scopus, and The Cochrane Central Register of Controlled Trials (CENTRAL) databases were accessed in January 2022. Clinical studies evaluating the outcomes of PRP, BMAC, and MSCs injections in sports-related injuries among PF players were considered eligible. The methodological quality was assessed using the modified Coleman Methodology Score (mCMS), and a short version of the Minimum Information for studies evaluating Biologics in Orthopaedics (MIBO) was recorded for every PRP study.



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RESULTS

Eleven studies met the eligibility criteria. All implemented PRP, most of them in treating muscle and ligament injuries. Only one study implemented BMAC, and no study implementing MSCs injections in PF players was found. The average mCMS value demonstrated a poor level of methodological quality. Studies reported only 26.13% of the relevant data of the short-MIBO.



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STUDY	Bezuglov et al. ¹⁷ 2021	Campbell et al. ¹⁸ 2013	Charouset et al. ¹⁹ 2014	Eirale et al. ²⁰ 2012	Hamilton et al. ²¹ 2015	Laver et al. ²² 2014	Olmo et al. ²³ 2018	Papalia et al. ²⁴ 2016	Seijas et al. ²⁵ 2014	Suzue et al. ²⁶ 2014	Zanon et al. ²⁷ 2016
LOE	IV	IV	IV	V	I	II	V	I	IV	V	IV
mCMS											
Study size	0	0	0	0	7	0	0	4	0	0	0
Mean follow up	0	0	4	4	0	0	4	4	4	0	7
Therapeutical approach	10	10	10	10	7	7	10	7	10	10	7
Type of study	0	0	10	0	15	15	0	15	0	0	10
Description of diagnosis	0	5	5	5	5	0	5	0	0	5	5
Description of technique	0	5	10	5	10	5	5	5	5	0	5
Description of rehabilitation	5	5	5	5	5	5	5	0	5	0	0
Outcome criteria	0	2	10	2	4	4	2	10	5	0	2
Procedure of assessing outcomes	0	0	15	0	9	5	0	15	0	0	5
Description of subject selection process	0	0	5	0	5	5	0	5	5	0	5
TOTAL SCORE	15	27	74	31	67	46	31	65	34	15	46

LOE, level of evidence; mCMS, modified Coleman Methodology Score.

Table 1. Modified Coleman methodology scores of included studies.



ITEM	CHECKLIST ITEM	Bezuglov et al. ¹⁷ 2021	Campbell et al. ¹⁸ 2012	Charoussset et al. ¹⁹ 2014	Eirale et al. ²⁰ 2012	Hamilton et al. ²¹ 2015	Laver et al. ²² 2014	Olimo et al. ²³ 2018	Papalia et al. ²⁴ 2016	Seijas et al. ²⁵ 2014	Suzue et al. ²⁶ 2014	Zanon et al. ²⁷ 2016
WHOLE BLOOD CHARACTERISTICS												
12	Whole blood platelet, differential leukocyte, and red cell analysis of all samples											
PRP PROCESSING												
13	PRP processing described sufficiently to enable replication (including commercial kit details and spin protocol)											
14	Platelet recovery rate of protocol											
15	PRP storage temperature and light exposure											
16	Time between blood drawing, PRP processing, activation, and delivery											
PRP CHARACTERISTICS												
17	PRP format (for example: liquid, gel, or membrane)											
18	PRP platelet, differential leukocyte, and red cell analysis of all samples											
ACTIVATION												
19	Activation described sufficiently to enable replication (including volume and concentration of activating agent)											
TOTAL		1	0	4	1	5	5	2	1	0	1	3



SHORT - MIBO RESULTS ON INJECTABLE ORTHOBIOLOGICS IN PROFESSIONAL FOOTBALL PLAYERS (MINIMUM INFORMATION FOR STUDIES EVALUATING BIOLOGICS IN ORTHOPAEDICS)



Whole blood characteristics	_____	9.09% of the studies
PRP processing	_____	63.64% of the studies
PRP characteristics	_____	9.09% of the studies
Activation	_____	54.55% of the studies



Marín Fermín et al. Injectable Orthobiologics in Professional Football (Soccer) Players: A Systematic Review. Journal of Cartilage and Joint Preservation. 2022. Graphical Abstract by Indira Rodriguez @rodriguez.indira



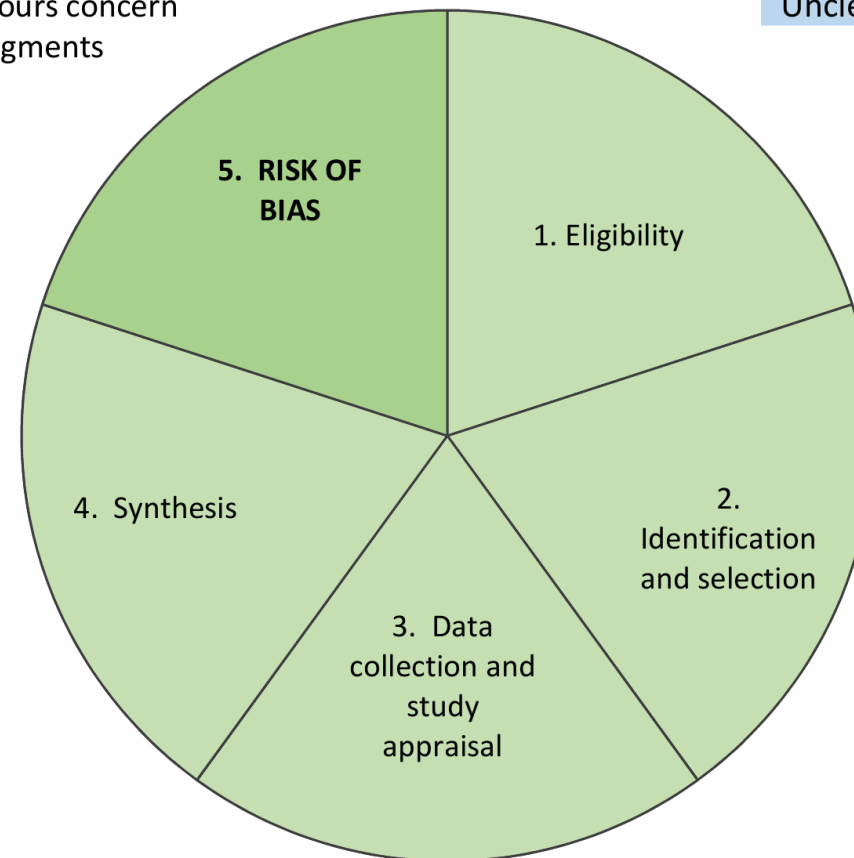
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Assessment of publication bias with ROBIS tool

Darker colours
indicate overall ROB
rating; lighter
colours concern
judgments



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CONCLUSION

There is scarce evidence on orthobiologics implementation in PF players other than PRP injections to treat muscle, ligament cartilage, bone, tendon, fascial, and capsular injuries. However, evidence lacks methodological quality and adherence to MIBO to support its implementation.

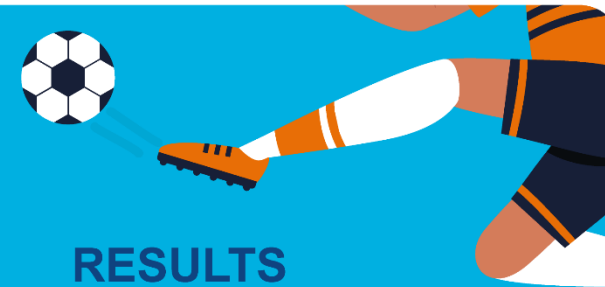


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INJECTABLE ORTHOBIOLOGICS IN PROFESSIONAL FOOTBALL SOCCER PLAYERS:



INJECTABLE ORTHOBIOLOGICS

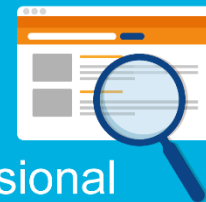
To evaluate the clinical outcomes of PRP, BMAC, and MSCs injections in treating sports-related injuries for professional football players



SYSTEMATIC REVIEW

Databases: 278 articles
Pubmed / EMBASE / Scopus / CENTRAL

Eleven eligible papers assessing injectable orthobiologics in professional football soccer players



RESULTS

Evidence is lacking in methodological quality and adherence to minimum information to evaluate orthobiologics interventions



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THANKS!

