

HIGH RETURN TO SPORT RATE AND FEW RE-RUPTURES AT LONG TERM IN PROFESSIONAL FOOTBALLERS AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION WITH HAMSTRINGS

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DISCLOSURE

- **S.Z.:**

SMITH & NEPHEW, DEPUY CONSULTANT
MEDACTA, DEPUY RESEARCH SUPPORT

- **M.M.:**

CARTIHEAL, GEISTLICH, ZIMMER BIOMET INSTITUTIONAL SUPPORT
REJOINT, GREEN BONE CONSULTANT

- ALL OTHER AUTHORS DECLARE NO C.O.I.



ACL INJURY: EPIDEMIOLOGY IN FOOTBALLERS

Epidemiology of Anterior Cruciate Ligament Injury in Italian First Division Soccer Players

Alberto Grassi, MD,[†] Luca Macchiarella, MD,^{*†} Matteo Filippini, MD,[†] Gian Andrea Lucidi, MD,[†] Francesco Della Villa, MD,[‡] and Stefano Zaffagnini, Prof[†]



44% CHAMPIONSHIP MATCHES

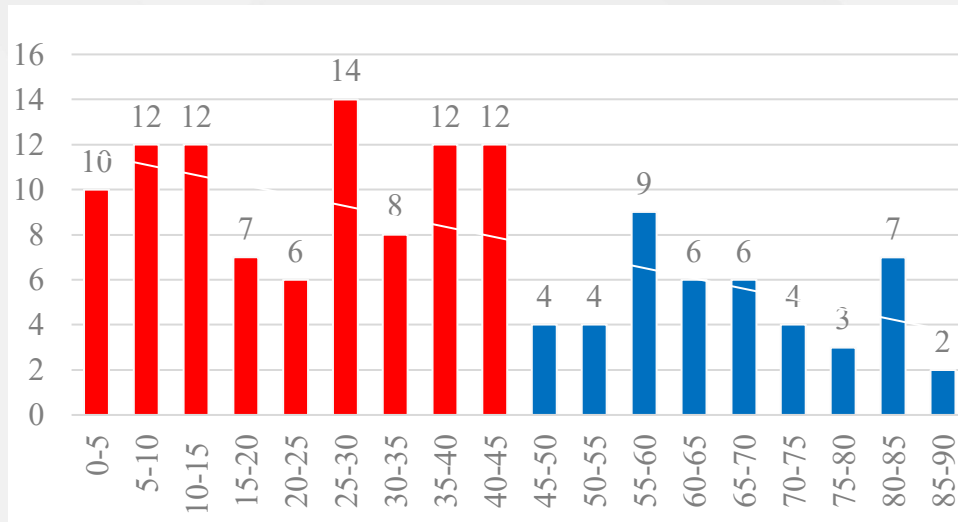
40% TRAINING

11% NATIONAL REPRESENTATIVES

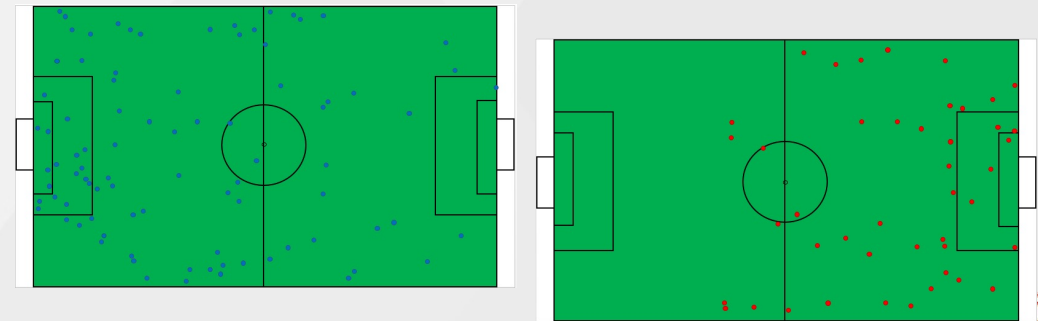
5% CUPS MATCHES

Grassi, Zaffagnini et al, Sports health 2020

FIRST HALF OF MATCH IN 67%

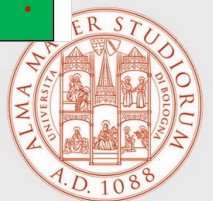


SIDELINES and PENALTY AREA



Della villa, Grassi et al, Bjsm 2021

Grassi et al, Ejost 2017



PURPOSE

- ANALYZING THE **RETURN TO PLAY AND THE CAREER OF PROFESSIONAL FOOTBALLERS WHO UNDERWENT ACL-R WITH HAMSTRINGS**
- EVALUATING **RE-RUPTURES AND RE-OPERATIONS AT INDEXED AND CONTRALATERAL KNEE**
- ASSESSING THE **LONG-TERM CLINICAL SUBJECTIVE OUTCOMES AND SATISFACTION**



METHODS

ALL ACL-R PERFORMED IN OUR SPORTS MEDICINE DEPARTMENT
FROM 2002 TO 2013 WERE SCREENED

INCLUSION CRITERIA

- CONTRACT TO A PROFESSIONAL FOOTBALL TEAM AT TIME OF SURGERY
- TOTAL OR SUBTOTAL ACL LESION
- INABILITY TO COMPETE DUE TO JOINT INSTABILITY

EXCLUSION CRITERIA

- MULTI-LIGAMENT RECONSTRUCTION
- CONCOMITANT MENISCAL ALLOGRAFT TRANSPLANTATION

SURGICAL TECHNIQUE

- **NON ANATOMICAL ACL-R WITH HAMSTRINGS** PRESERVING THE DISTAL INSERTION
- SAME SENIOR SURGEON (M.M.)

SAME REHABILITATION PROTOCOL



METHODS

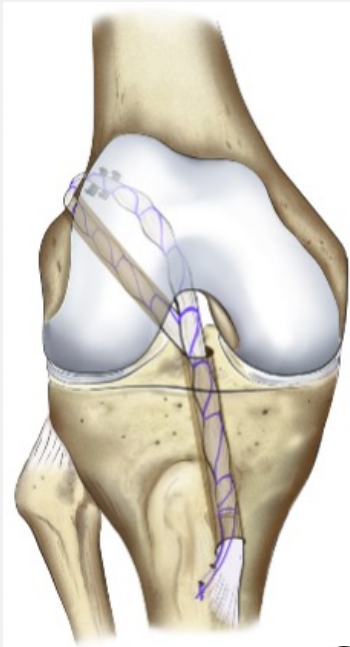
EVALUATION CRITERIA

- SATISFACTION
- TIME TO TEAM TRAINING
- LEVEL OF SPORT
- **SUBSEQUENT SURGERIES (RE-RUPTURES & RE-OPERATIONS)**
- **LYSHOLM KNEE SCORING SCALE**
- **OFFICIAL GAMES PLAYED AFTER SURGERY**

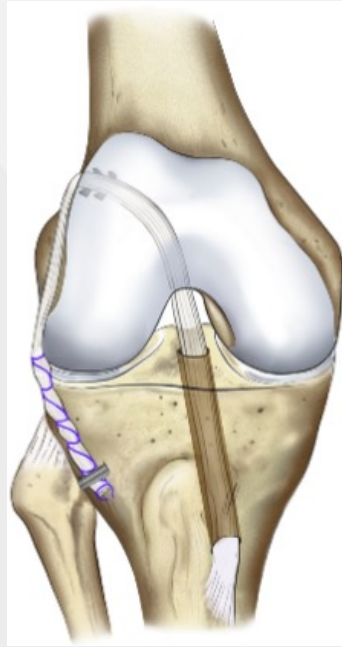


RESULTS

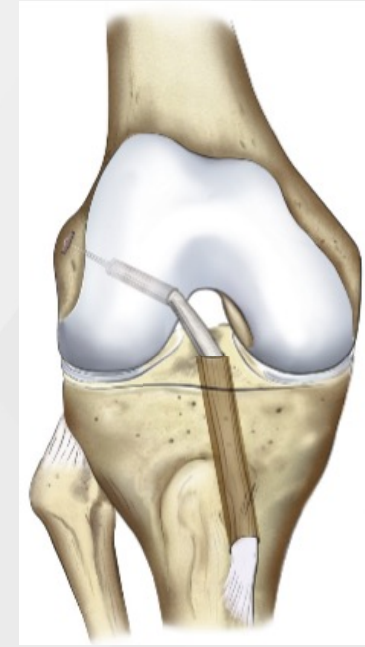
28 PROFESSIONAL FOOTBALLERS [MEAN AGE **25 Y** (20 → 30)] UNDERWENT
33 ACL-RECONSTRUCTIONS WITH HAMSTRINGS AND
“**OVER THE TOP**” TECHNIQUE



16 NADB
49%



8 SB + LET
24%



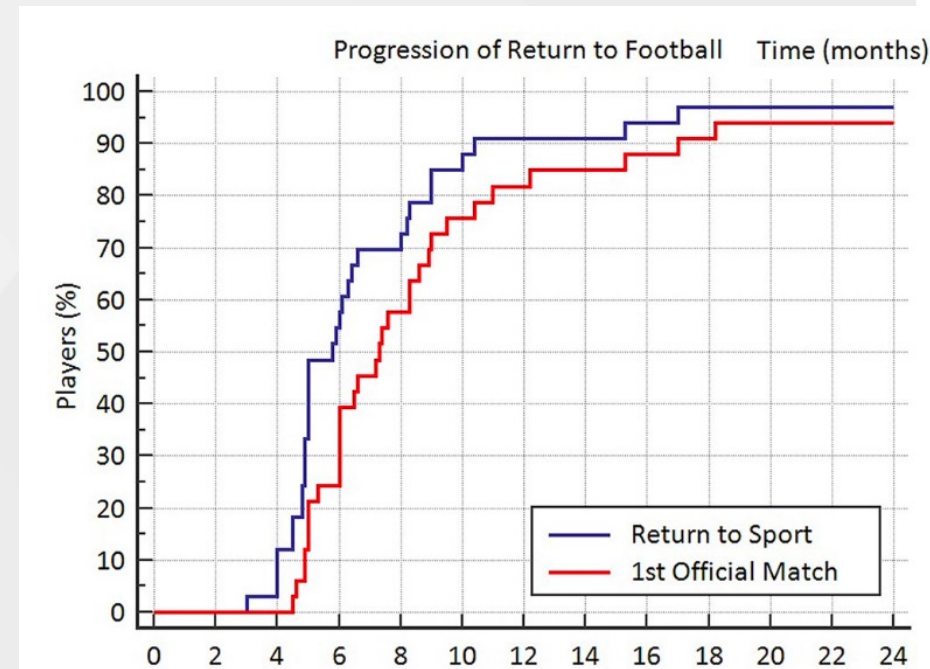
9 SB
27%

A MENISCAL LESION WAS PRESENT IN 20 CASES (61%)

RESULTS

SPORT PERFORMANCE

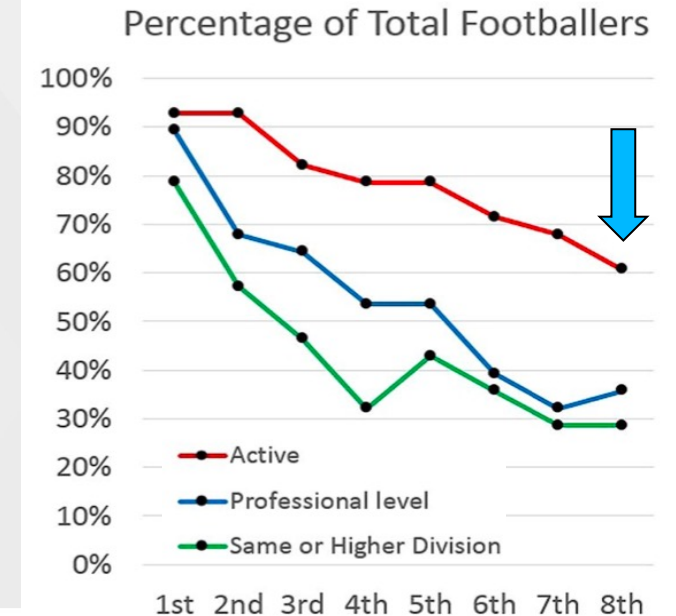
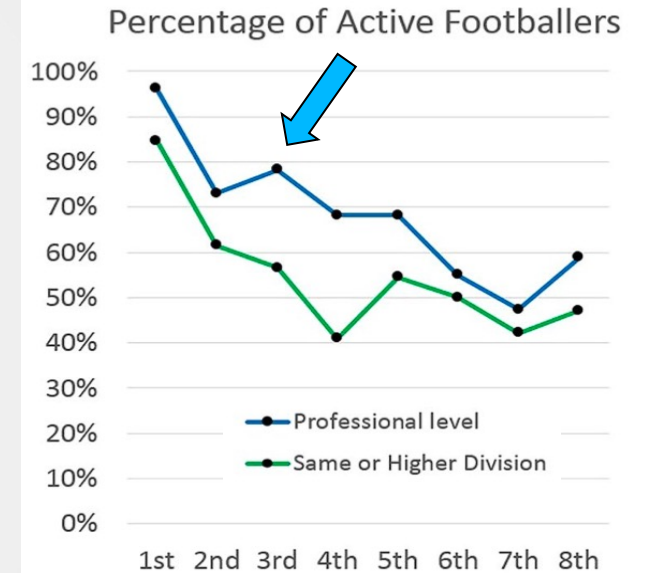
- 26 PATIENTS WERE STILL PLAYING IN THE FOUR HIGHEST LEVELS OF PROFESSIONAL FOOTBALL
- 2 ATHLETES WERE CONTRACTED BY FIRST-LEVEL PROFESSIONAL TEAMS
- 97% RETURN TO PLAY AFTER 6.6 MONTHS (3-15)
- 94% (31) FIRST OFFICIAL MATCH AFTER 8 MONTHS (4,6-18)



RESULTS

SPORT PERFORMANCE

- 82% OF THE ATHLETES WERE STILL COMPETING AT **PROFESSIONAL LEVEL** DURING THE FIRST 3 SEASONS AFTER SURGERY
- 60% (17) **STILL ACTIVE** 8 SEASONS AFTER SURGERY
- 1 ATHLETE RETIRED AFTER A FULL RETURN TO PLAY WITHOUT COMPLETING AN OFFICIAL GAME
- 2 ATHLETES (7%) AGED 37 AND 39 YEARS RETIRED THE SEASON FOLLOWING ACL-R



RESULTS

CLINICAL OUTCOMES

12,6 YEARS (6,7-17,5) FU

AVERAGE LYSHOLM 94 POINTS

85% EXCELLENT

3% GOOD

12% FAIR

0% POOR

79% ATHLETES WERE SATISFIED

64% RETURNED AT THEIR DESIRED LEVEL OF PLAY



RESULTS

FAILURES and REINJURIES

3 OF THE 33 (9%) ACL RECONSTRUCTIONS FAILED:

2 NADB OTT (2/16)

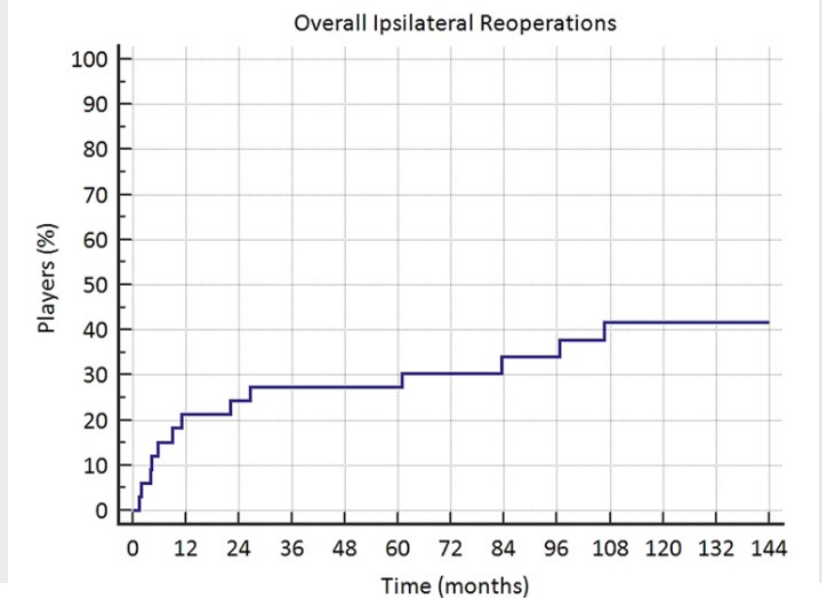
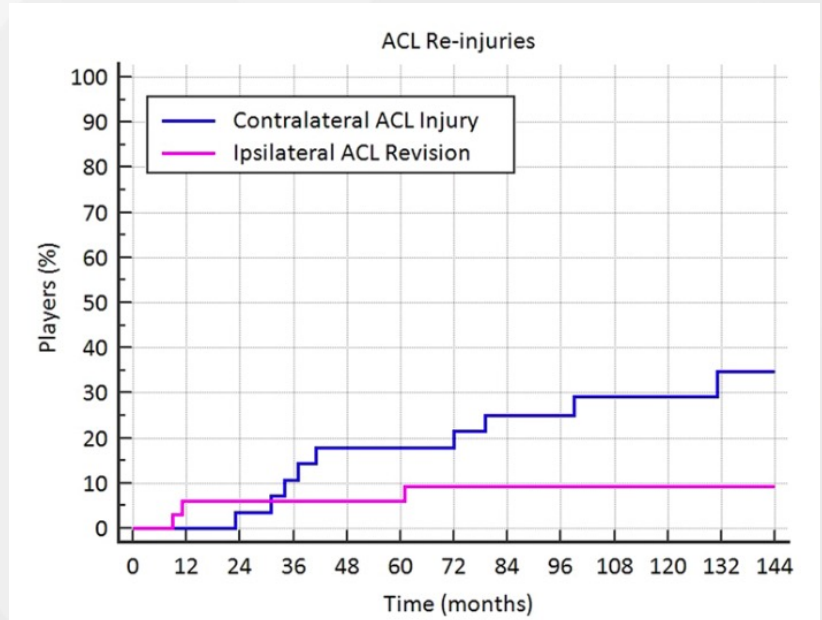
1 SB OTT (1/9)

0 SB OTT + LET (0/8)

30% ADDITIONAL PROCEDURES (+MENISCECTOMIES)

9% RE-RUPTURES

21% CONTRALATERAL ACL INJURY



CONCLUSIONS

IN PROFESSIONAL SOCCER PLAYERS

ACL RECONSTRUCTION WITH **HAMSTRINGS AND OVER THE TOP** TECHNIQUES IS A SAFE END EFFECTIVE PROCEDURE

ALLOWS FULL RETURN TO PLAY AT A COMPETITIVE LEVEL AND
LONG CAREER SURVIVORSHIP

HOWEVER, ATHLETES WITH LONGER CAREERS HAVE A HIGHER
PERCENTAGE OF CONTRALATERAL ACL RUPTURE AND A
GENERAL DROP IN THE QUALITY OF PLAY



REFERENCES

Balendra G, Jones M, Borque KA, Willinger L, Pinheiro VH, Williams A (2021) Factors affecting return to play and graft re-rupture after primary ACL reconstruction in professional footballers. *Knee Surg Sports Traumatol Arthrosc*

Grassi A, Macchiarola L, Filippini M, Lucidi GA, Della Villa F, Zaffagnini S (2020) Epidemiology of anterior cruciate ligament injury in Italian first division soccer players. *Sports Health*

Lai CCH, Ardern CL, Feller JA, Webster KE (2018) Eighty- three per cent of elite athletes return to preinjury sport after anterior cruciate ligament reconstruction: a systematic review with meta-analysis of return to sport rates, graft rupture rates and performance outcomes. *Br J Sports Med*

Magnussen RA, Meschbach NT, Kaeding CC, Wright RW, Spindler KP (2015) ACL graft and contralateral ACL tear risk within ten years following reconstruction: a systematic review. *JBJS*

Marcacci M, Molgora AP, Zaffagnini S, Vascellari A, Iacono F, Lo Presti ML (2003) Anatomic double-bundle anterior cruciate ligament reconstruction with hamstrings. *Arthroscopy*

Marcacci M, Zaffagnini S, Iacono F, Neri MP, Loreti I, Petitto A (1998) Arthroscopic intra- and extra-articular anterior cruciate ligament reconstruction with gracilis and semitendinosus tendons. *Knee Surg Sports Traumatol Arthrosc*

Rosenstiel N, Praz C, Ouanezar H, Saithna A, Fournier Y, Hager JP, Thaunat M, Sonnery-Cottet B (2019) Combined anterior cruciate and anterolateral ligament reconstruction in the professional athlete: clinical outcomes from the scientific anterior cruciate ligament network international study group in a series of 70 patients with a minimum follow-up of 2 Years. *Arthroscopy*

