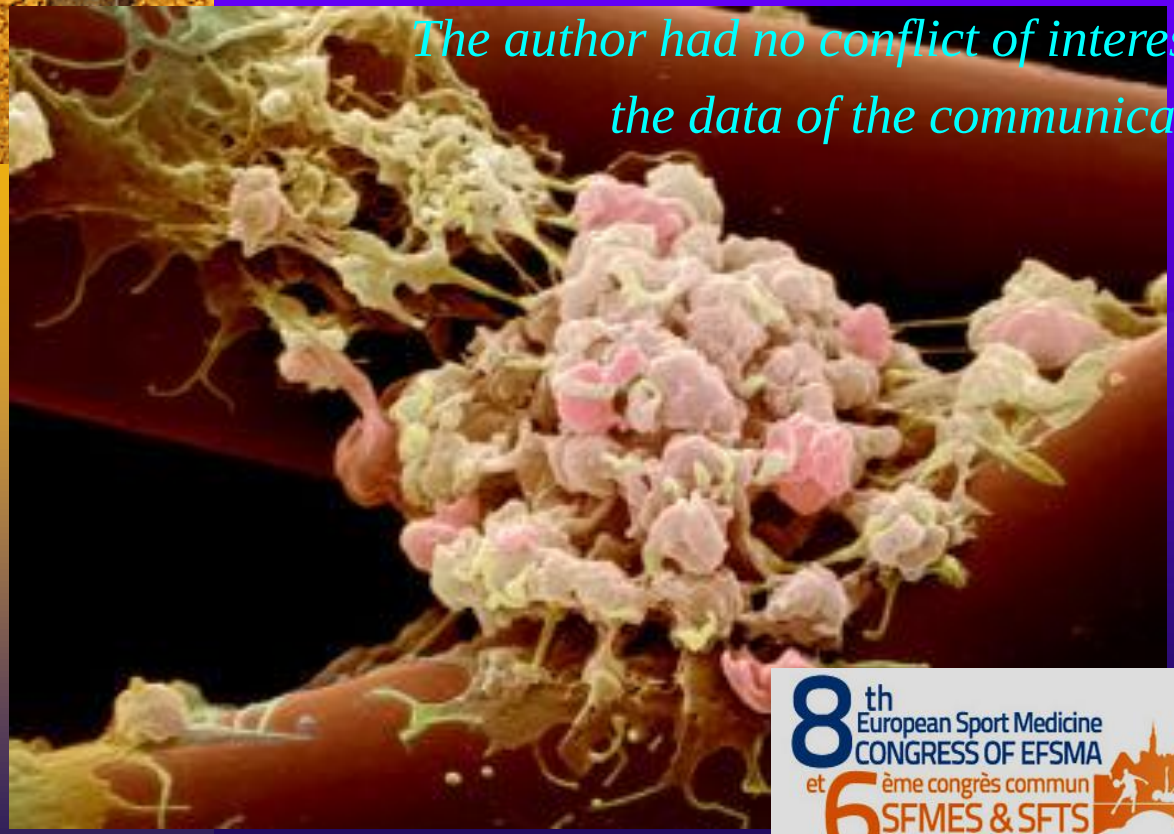
Centre de Biologie et Médecine du Sport de Pau

Traumatic muscle injury
PRP or not PRP in 2013 ?
Current state of knowledge

The author had no conflict of interest concerning the data of the communication



Marc Bouvard
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Alain Lippa

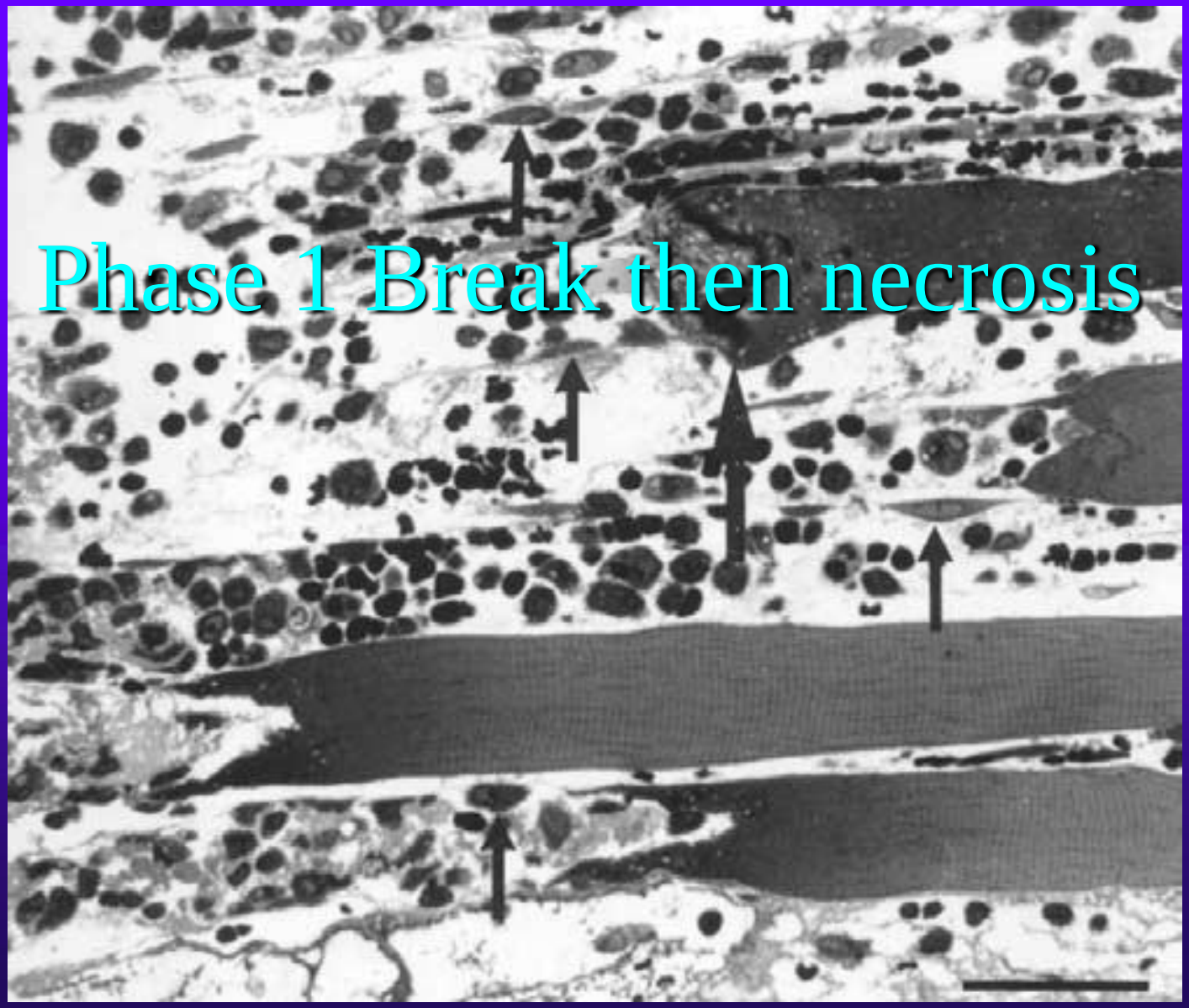
8th European Sport Medicine CONGRESS OF EFSMA
et 6ème congrès commun SFMES & SFTS
Strasbourg September 25 - 28, 2013 Palais des Congrès

- Several million muscular injuries every year (OMS 2003)
- Until 34 % of recurrence

(Orchard Am.J.Sports Med 2001)

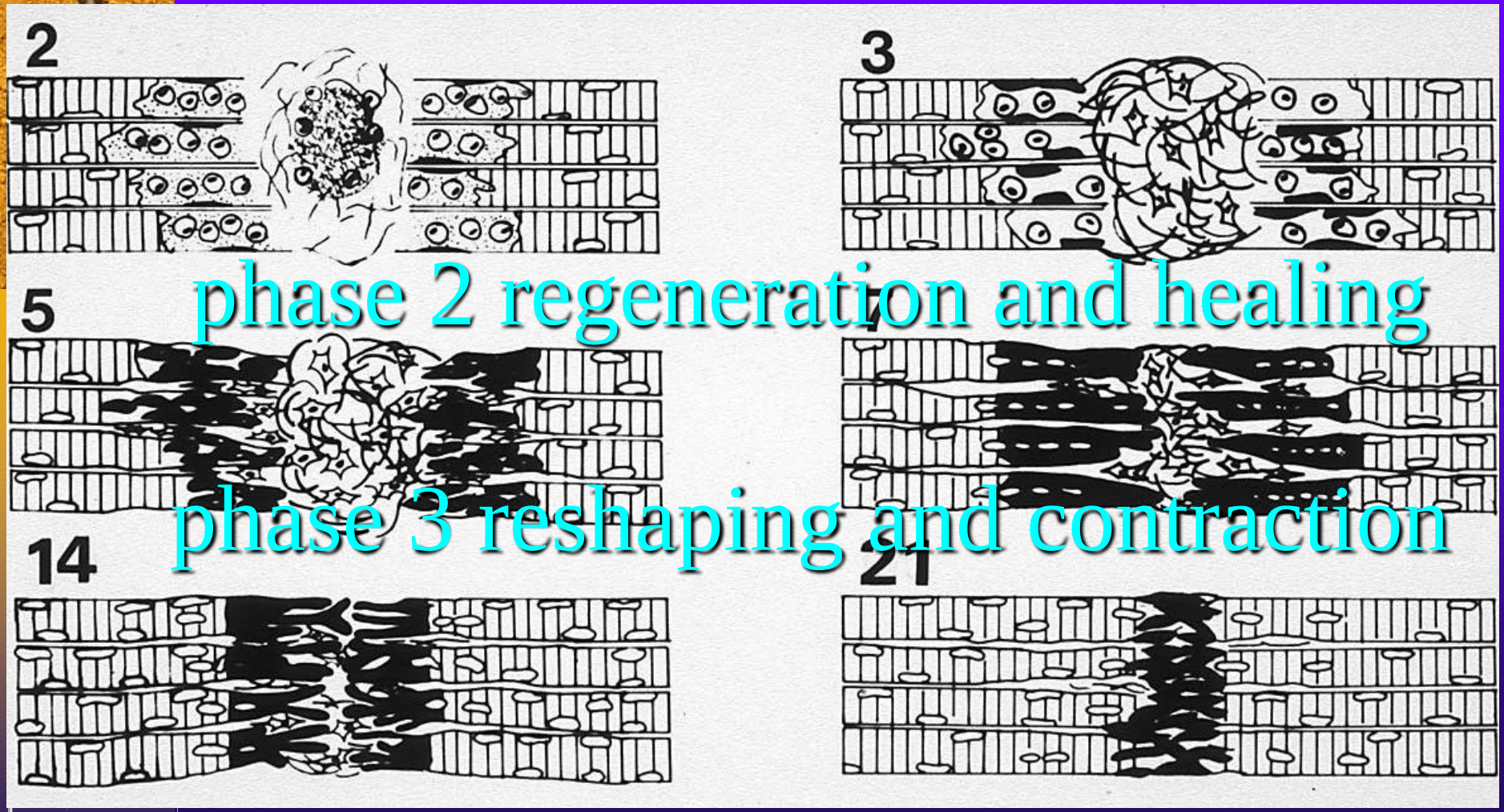
Natural evolution of the lesion

Järvinen 2007



Natural evolution of the lesion

The muscle regenerates
the connective tissue heals



phase 2 regeneration and healing

phase 3 reshaping and contraction

Effects of the PRP in Vitro and animal studies

In vitro

↑ The proliferation and the differentiation of the satellite cells(units) and muscular stem cells. Activate the angiogenesis and regulate the staff turnover of the collagen

(Borrione 2010, Harmon 2010, Redler 2011, Harris 2012, Menetrey 2000, Matsui 2012, Li H. Poddar M., Chen CW. And coll. Plos One 2013, McLure MJ, Garg K. and coll. 2013)

Animal studies

Improvement and acceleration of the repair of muscular injuries to the rat, the mouse and the sheep in particular

(Andia 2003, Borrione 2010, Hammond 2009, Lefaucher 1996, Wrigt-Carpenter 2004, Gigante 2012, Terada 2013)

What about clinical trials ?

Clinical Trials

author	date	level of evidence	N	type	results
Loo	2009	4	1	p-prp	?
Frey	2009	4	2	L-prp	?
Hamilton	2010	4	1	L-prp	return J17
Wrigt-Carpenter	2004	3	18	sérum	return J16 vs 22
Sanchez	2005	4 poster	21	P-prp	return/2
Cugat	2005	4 poster	16	?	return/2
Bénézis	2010	4	25	P-prp	?
Jaadouni	2012	4	48	P-prp	return j12vs37 return/3 si <j9 (j12vs45) harmstring gastrocn. = 3 x add. Quad (j31vs10)
Wetzel	2013	4	12	?	?
Bermuzzi	2013	4	53	P-prp	return j20-30 1 relapse> 1 year
Bubnov	2013	1	30	P-prpr	return early force higher

Clinical Trials

Bubnov R, Yevseenko V, Semeniv I.

Ultrasound guided injections of Platelets Rich Plasma for muscle injury in professional athletes. Comparative study.

Med Ultrason. 2013 Jun;15(2):101-5.

30 men (mean age 24 years old) professional athletes

acute muscle injury with US (18 thigh injury)

randomly 2 groups: group A PRP (US guidance)+ conservative treatment
group B conventional conservative treatment only

pain visual analogue scale (0 to 10), resisted flexion or strength, and range of motion.

evaluated in the days 1, 7, 14, 21, and 28 after treatment starting+ US

RESULTS: pain relief > in group A (93%) vs B (80%) day 28 ($p<0.05$)

significant changes in strength ($p<0.05$) and range of motion ($p<0.05$) for PRP treatment group was observed.

After 28 days no significant differences between groups for pain on resisted flexion and strength ($p>0.05$)

the range of movement improved > group A vs group B ($p< 0.05$).

Clinical Trials

Med Ultrason. 2013 Jun;15(2):101-5.

Ultrasound guided injections of Platelets Rich Plasma for muscle injury in professional athletes. Comparative study.

Bubnov R, Yevseenko V, Semeniv I.

Subjective global function scores improved significantly in group A compared with group B on the 28th day ($p<0.05$).

ability to practice sport was 10+/-1.2 days in group A vs 22+/-1.5 days in group B.

CONCLUSIONS: Injections of PRP under ultrasound guidance had asignificantly higher level of pain relief, physical recovery, and faster regeneration compared with conventional conservative treatment in acute muscle trauma in professional athletes.

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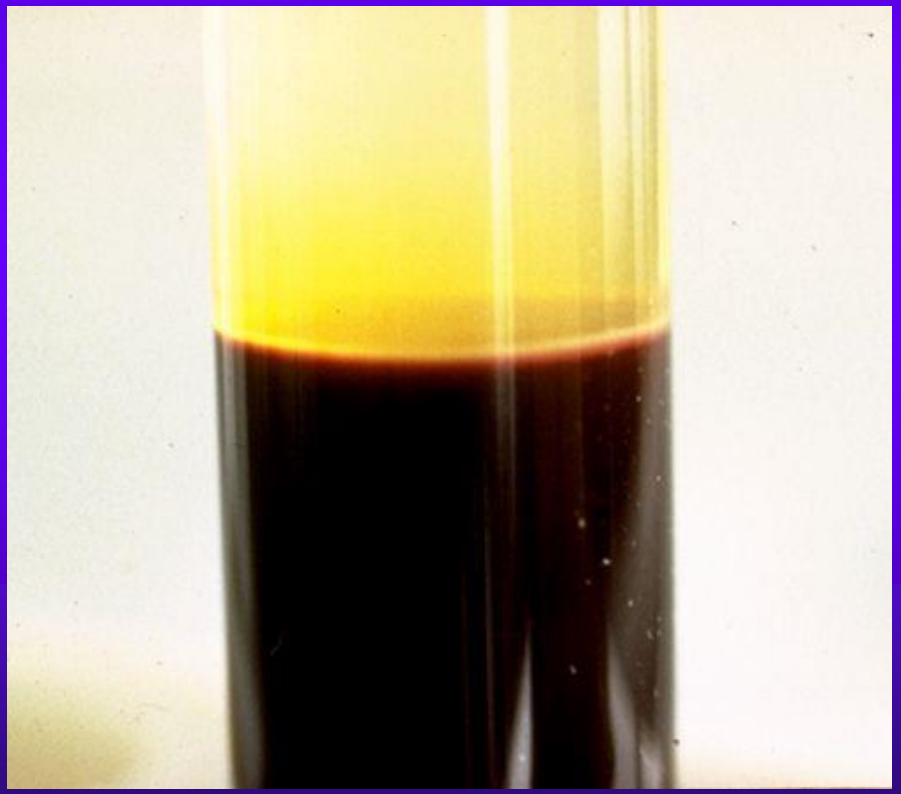
« PRP » - About what do we speak ?



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PRP, What is not !

Conclusions

Lack of clinical studies of high level of evidence

PRP without erythrocytes or leukocytes

strict aseptic # operating room

Extemporaneous, autologous, ultrasound-guided injections

Objective: Get a cure ≠ reduce to infinity time return to competition

Reasonable indications:

recurrent lesions
≥ grade 2 lesions including hamstrings and triceps surae