

ORTHOPÄDIE
SONNENHOF
DITTEL + WILHELM ROBERT

Shoulder Pain and Orthopaedic DDX: Sports Medicine

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www.schulterteam.ch




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www.schulterteam.ch/für-zuweiser/

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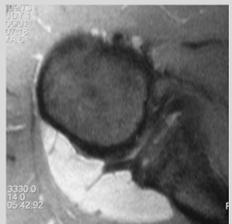
SCHULTER/ELLBOGEN UND SPORTORTHOPÄDIE (SES)




2

ANTERIOR / LATERAL

ORTHOPÄDIE
SONNENHOF
DITTEL + WILHELM ROBERT

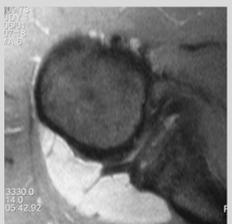
3330 0
14.0
05:42:52
T1-ES




3

HOW AGGRESSIVE / INVASIVE ?

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3330 0
14.0
05:42:52
T1-ES




4

SHOULDER GIRDLE

ORTHOPÄDIE
SONNENHOF
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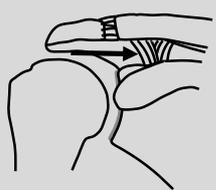
Courtesy of Lajal G, Klagenfurt, Austria




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SUPRASPINATUS

ORTHOPÄDIE
SONNENHOF
DITTEL + WILHELM ROBERT

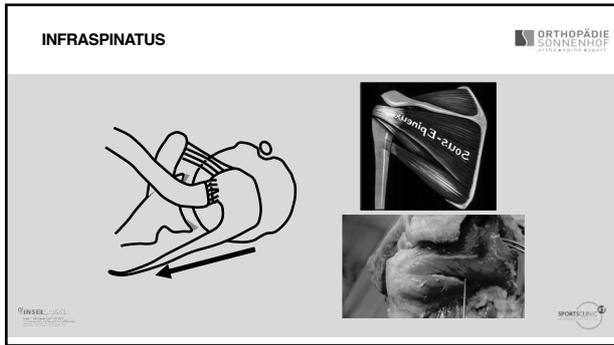




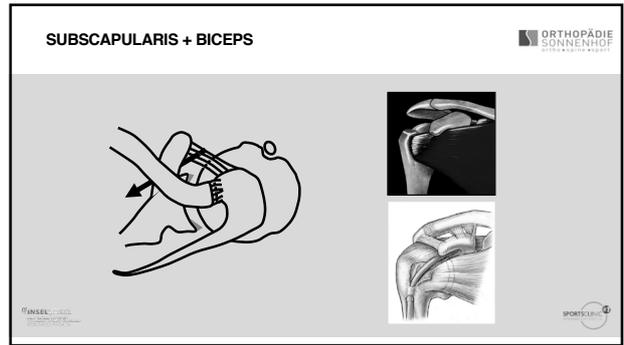
Supraspinatus



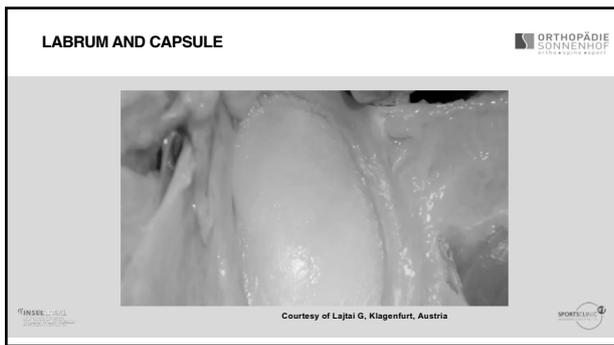

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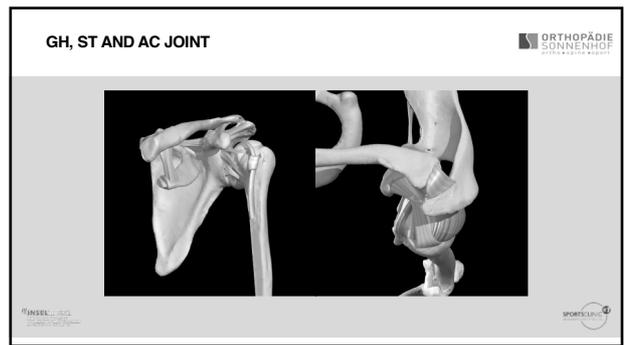
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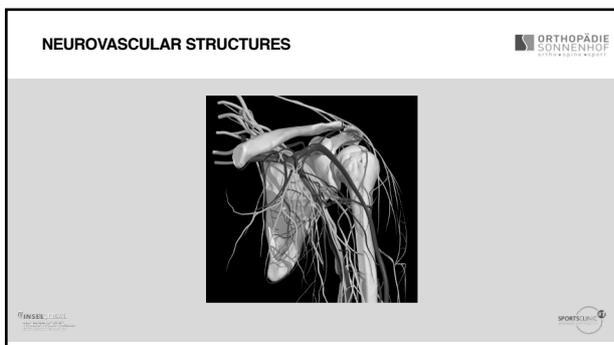
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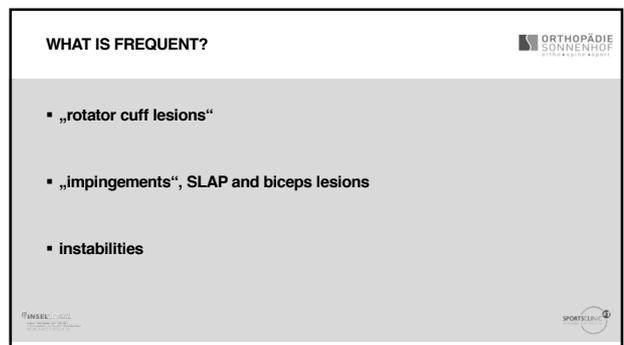
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HISTORY ROTATOR CUFF

- Traumatic versus non traumatic
- Answer of the Tribunal Federal:
- <https://www.swisorthopaedics.ch/de/fachwelt/kommissionen-und-expertengruppen/empfehlungen-und-publikationen>

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PHYSICAL EXAMINATION

- Force of the ABD, ER and IR
- ER-Lag



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X RAY

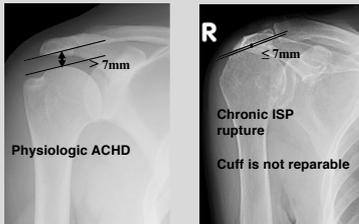
- 3 views



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X RAY: WHAT I HAVE TO LOOK

- ACHD



90% SSP
67% ISP
43% SSC

Saupe et al: AJR 2006

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X RAY: WHAT I HAVE TO LOOK



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ULTRASOUND OR MR ARTHROGRAM



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ULTRASOUND OR MR ARTHROGRAM

- Similar Sensitivity, Specificity, PPV und NPV
- Ultrasound less expensive
- MR Arthrogram better regarding...
 - Size of the rupture
 - Retraction
 - Lengths of the tendon
 - Fatty infiltration of the muscle
 - Reproducibility

Roy, BMJ, 2015
Okoroa, Orthopedics, 2017

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MRI: WHAT I HAVE TO LOOK

A-MRI/A-CT

- 1.) Partial versus full thickness tear
- 2.) Retraction of the tendon
- 3.) Fatty infiltration of the muscle

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TEAR

Full thickness



Partial



21

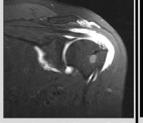
RETRACTION

Classification „Patte“

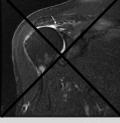
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Retraction behind the glenoid → Refix not possible

Traumat. SSC rupture → "EMERGENCY"

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FATTY INFILTRATION

▪ Parasagittal

Grade 0 Normal	Grade 1 Streaks of fat	Grade 2 More muscle than fat	Grade 3 Equal muscle and fat	Grade 4 More fat than muscle
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▪ Same amount of fat and muscle = not repairable!

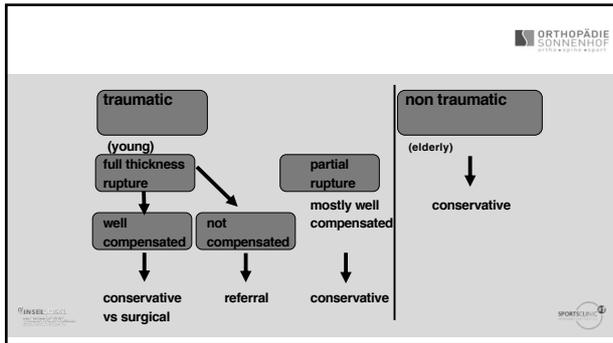
Goutallier, CORR, 1994

23

traumatic

non traumatic

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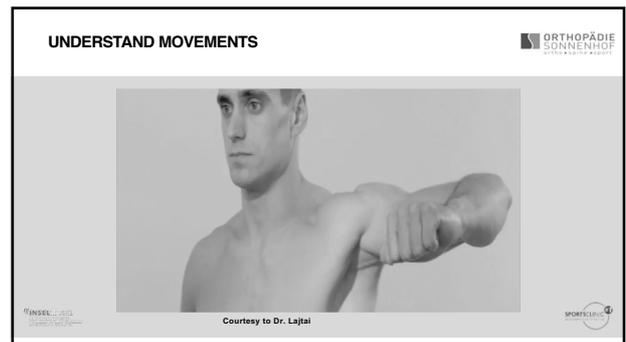
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- ORTHOPÄDIE SONNENHOF
- WHAT IS FREQUENT?
- „rotator cuff lesions“
 - „impingements“, SLAP and biceps lesions
 - instabilities
- INSSELE
- SPORTSLINIE

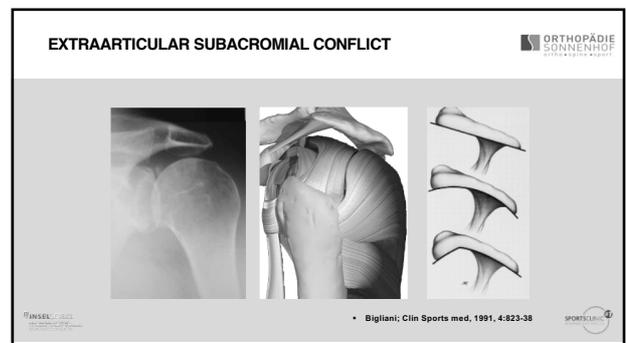
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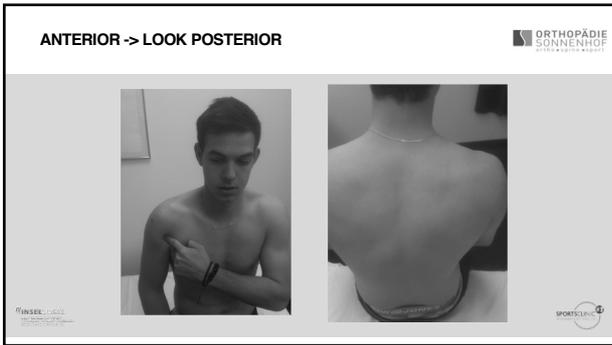
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- ORTHOPÄDIE SONNENHOF
- EXTRAARTICULAR SUBACROMIAL CONFLICT
- pain
 - Onset by increase of overhead activity
 - Night
 - Dominant arm
 - Associated with....
- INSSELE
- SPORTSLINIE

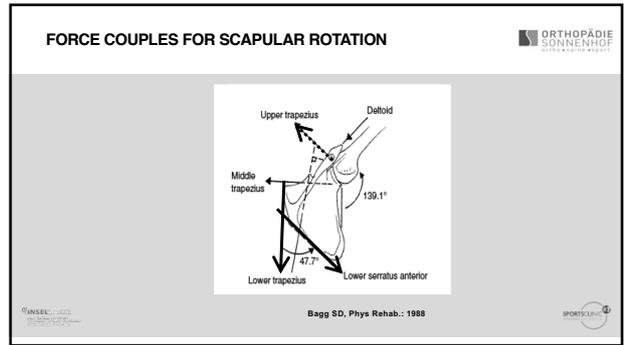
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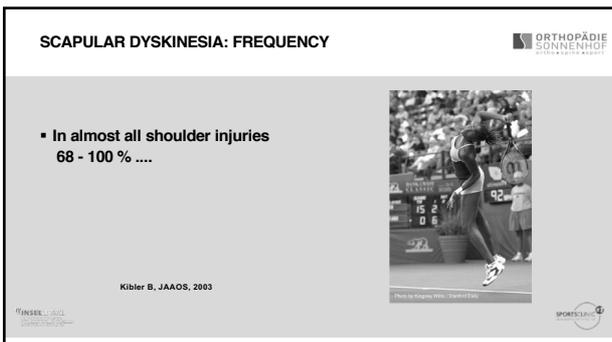
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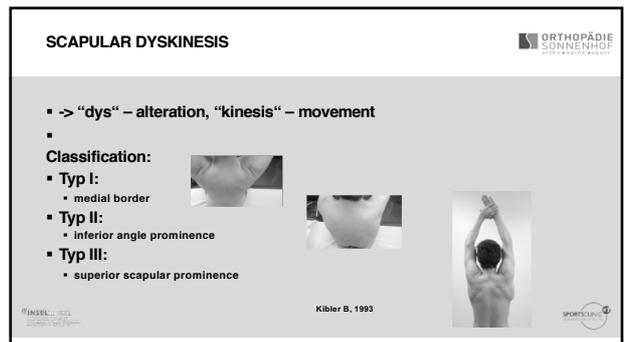
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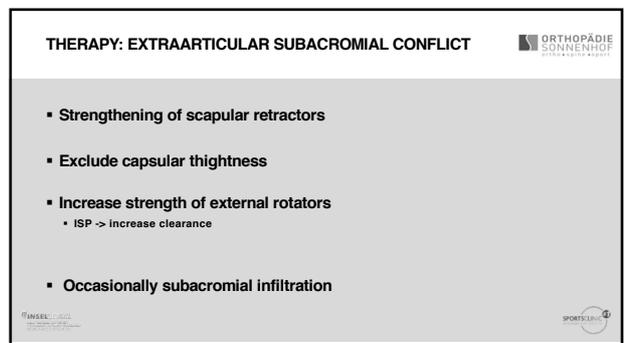
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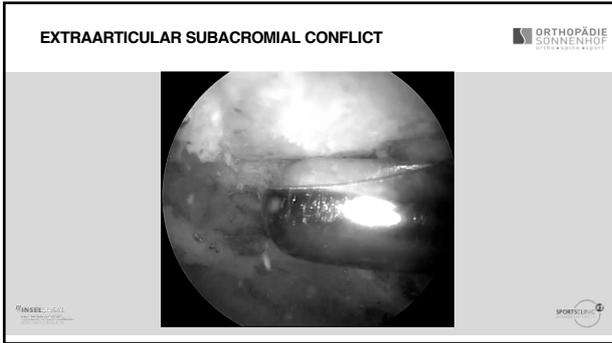
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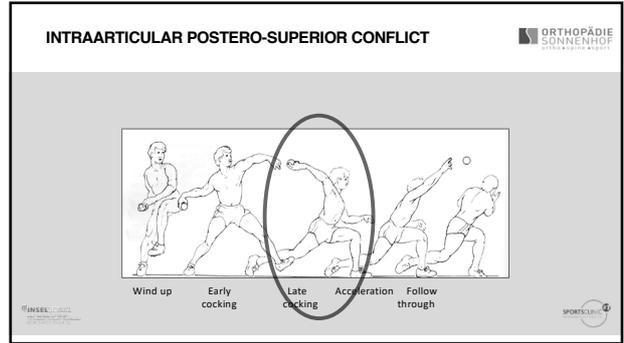
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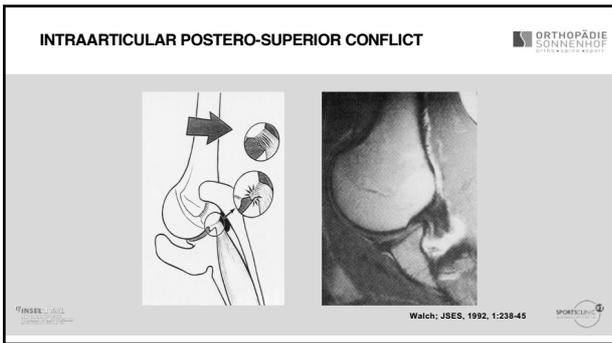
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MRI: IMPINGEMENTS IN THROWING SHOULDERS

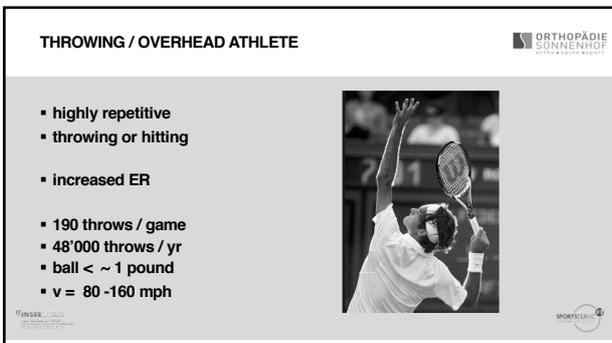
	During	After the Career	
	(n=20)	6.8 y (n=20)	21 y (n=17)
Post.Sup. Walch	8 *	1 ns	0
Ant. Sup. Imp.	5 *	0 ns	0

* = sign.

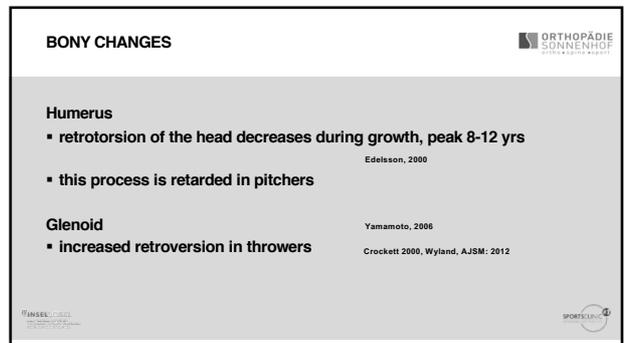
Schaer M. Zumstein MA; CORR: 2018

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**CLINICAL:
GIRD VS TOTAL ARC OF ROM ?**

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DITTEL & LEISTNER MEDIZIN

- Swimmers
 - sympt. + asympt. Patients -> same ROM -> No GIRD
- Throwers
 - clinical signs – loss of TROM – GIRD
 - „Torsion difference“ TS > NTS
 - GIRD is referenced to „torsion difference“
 - GIRD 25°, Torsion +25°, GIRD-torsion 0°
 - GIRD 25°, Torsion + 0°, GIRD-torsion 25°

Bak K, Magnusson, AJSM: 1998

Armin N, JAAOS: 2015

Whiteley R, J Sci Sports Med: 2016

INSSELE
SPORTSLINIE

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TREATMENT OPTIONS

ORTHOPÄDIE SONNENHOF
DITTEL & LEISTNER MEDIZIN

- Rest and rehabilitation
- GH injection
- Stretching PI capsule / strengthening of scapular stabilizers
- Restore ROM

→ Modification late cocking phase



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SURGICAL TREATMENT

ORTHOPÄDIE SONNENHOF
DITTEL & LEISTNER MEDIZIN



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Levigine; CORR, 2012, 470:1571-8

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**MRI FINDINGS IN SHOULDERS OF
PROFESSIONAL HANDBALL PLAYERS**

ORTHOPÄDIE SONNENHOF
DITTEL & LEISTNER MEDIZIN

B. Jost, M. Zumstein; CORR: 2005

Schaer M, Zumstein MA; CORR: 2018



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PATIENTS

ORTHOPÄDIE SONNENHOF
DITTEL & LEISTNER MEDIZIN

	During	after the Career	
		6.8 y	21 y
Nr of subjects (n)	20	20	17
Age (y)	29	36	51

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PAIN IN THE THROWING SHOULDER

ORTHOPÄDIE SONNENHOF
DITTEL & LEISTNER MEDIZIN

pain (n=11)		
- 3-tendon RC abnorm.	n=10	}
- SSP abnorm.	n=1	
no pain (n=19)		
- 3-tendon RC abnorm.	n= 1	}
- SSP abnorm.	n=14	

→ Partial tears and tendinopathy of the SSP not a predictor for pain * = sign.

Jost B, Zumstein M et al., CORR: 2005

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QUESTION ?

- Pain does not come from the supraspinatus...
- Pain does not come from the partial tears...
- ... where could the pain come from?....

?

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THROWING SHOULDER PAIN

... correlated with ...

- active career
- long head of the biceps pathologies
- SSC + ISP pathologies
- edema of the greater tuberosity

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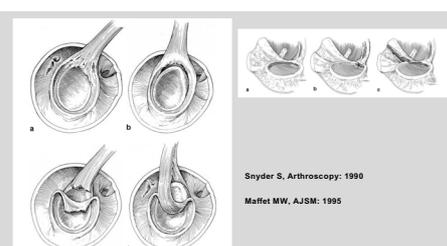
LHB = A MAJOR CAUSE OF PAIN

- Proximal desinsertion (SLAP)
- Tenosynovitis
- Hypertrophy
- Delamination
- Pre-rupture
- Subluxation
- Dislocation



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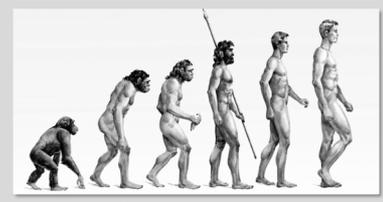
PROXIMAL INSERTION: SLAP LESIONS



Snyder S, Arthroscopy: 1990
Maffet MW, AJSM: 1995

52

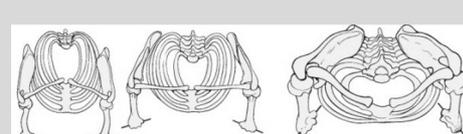
PULLEY LESIONS



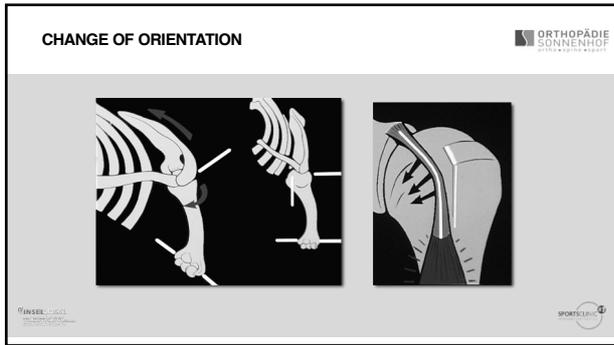
... may be because of evolution of humans !

53

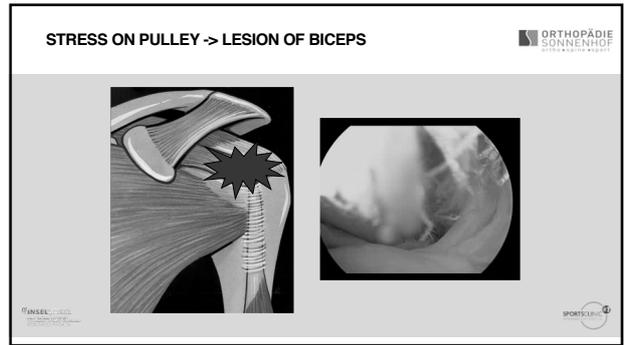
CHALLENGE IN THE HORIZONTAL PLAN



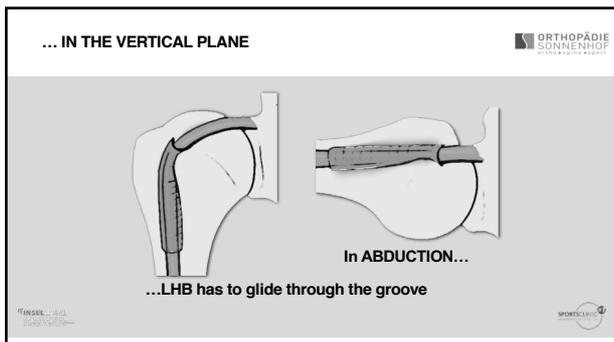
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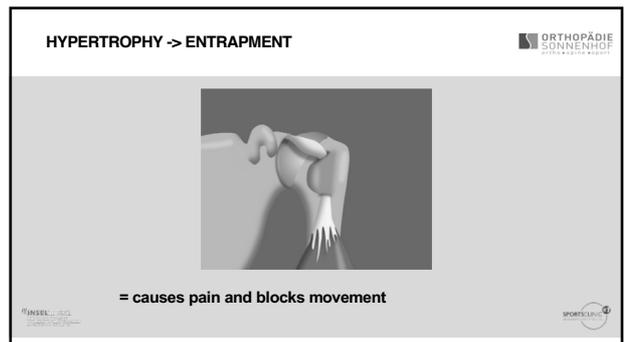
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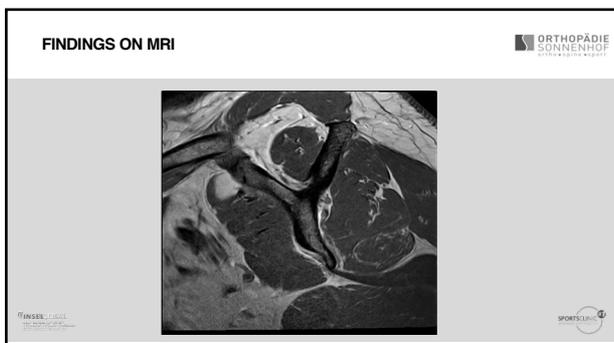
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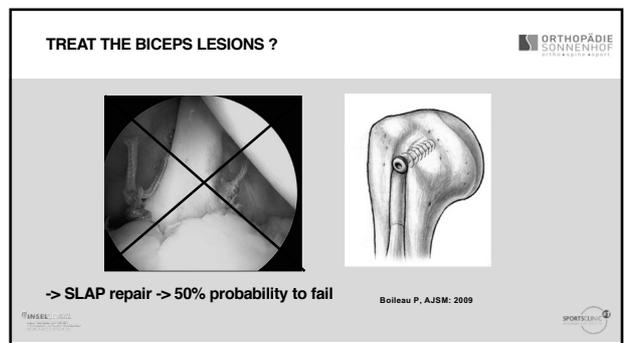
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WHAT IS FREQUENT?

- „rotator cuff lesions“
- „impingements“, SLAP and biceps lesions
- instabilities

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BONY STABILITY

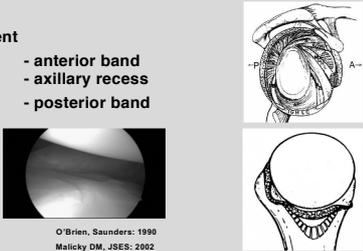


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INFERIOR GLENOHUMERAL LIGAMENT

- always present
- consists of:
 - anterior band
 - axillary recess
 - posterior band



O'Brien, Saunders: 1990
Malicky DM, JSES: 2002

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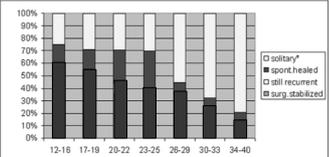
CLINICAL PRESENTATIONS

- Acute dislocation
- Chronic instability
- Unstable painful shoulders (= UPS)

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NATURAL HISTORY AFTER FIRST TIME DISLOCATION (F-UP 25 J)



Age Group	solitary	sport healed	still recurrent	surry stabilized
12-16	~70%	~25%	~5%	~0%
17-19	~60%	~30%	~10%	~0%
20-22	~50%	~35%	~15%	~0%
23-25	~40%	~40%	~20%	~0%
26-29	~30%	~45%	~25%	~0%
30-33	~20%	~50%	~30%	~0%
34-40	~10%	~55%	~35%	~0%

Which 50% - 60% should we operate after 1. dislocation?

Hovelius LM, JBJS Am; 2008

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RISK FACTORS FOR RECURRENCE (n=20'719)

- Age
- Male
- Contact- and overhead sport
- 60% redislocations up to 2 y f-up
- 75% redislocations up to 5 y f-up
- Over 1/3 redislocations after 2 years f-up !

Handoll HGG: COCHRANE; 2004
Leroux T: AJSM; 2014

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RISK FACTORS FOR RECURRENCE
(n=20'719)

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- Age
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Handoll HHG: COCHRANE; 2004
Leroux T: AJSM; 2014

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RISK FACTORS FOR RECURRENCE
(n=20'719)

ORTHOPÄDIE SONNENHOF
DIPLOM-UNIVERSITÄT WÜRZBURG

- Age
- Male
- Contact- and overhead sport
- 60% redislocations up to 2 y f-up
- 75% redislocations up to 5 y f-up
- Over 1/3 redislocations after 2 years f-up !
- Only 5 yrs f-up studies are ± informative!

Castagna A: AJSM; 2010
Gerber C: JBJS; 2016

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RISK FACTORS FOR RECURRENCE
(n=20'719)

ORTHOPÄDIE SONNENHOF
DIPLOM-UNIVERSITÄT WÜRZBURG

- Age
- Male
- Contact- and overhead sport
- 60% redislocations up to 2 y f-up
- 75% redislocations up to 5 y f-up
- Over 1/3 redislocations after 2 years f-up !
- Only 5 yrs f-up studies are informative!
- additional 25% redislocations after 5 yrs f-up!

Gerber C: JBJS; 2016

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RISK FACTORS FOR RECURRENCE ARE KNOWN

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- Age
- Male
- Contact- and overhead sport
- Competitive sport
- Hyperlaxity
- Glenoid bone deficiencies
- Humeral bone deficiencies

Balg F, Boileau P, JBJS B; 2006
Leroux T: AJSM; 2014

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**CHRONIC INSTABILITY:
RADIOGRAPHIC EXAMINATION**

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DIPLOM-UNIVERSITÄT WÜRZBURG

Arthro-CT superior to Arthro-MRI

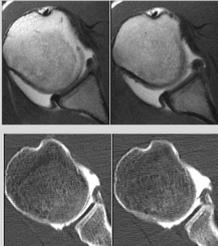
WHY?

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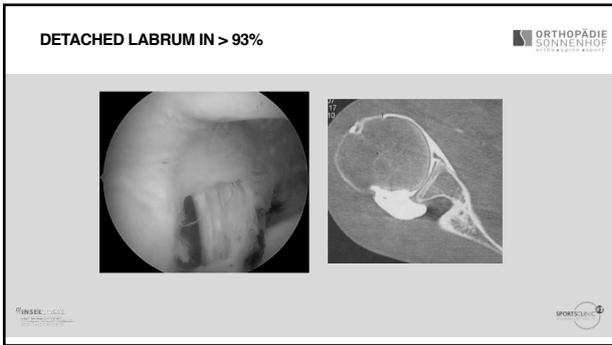
ARTHRO – CT IS SUPERIOR: VISUALIZE THE IMPORTANT BONY STRUCTURES

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DIPLOM-UNIVERSITÄT WÜRZBURG

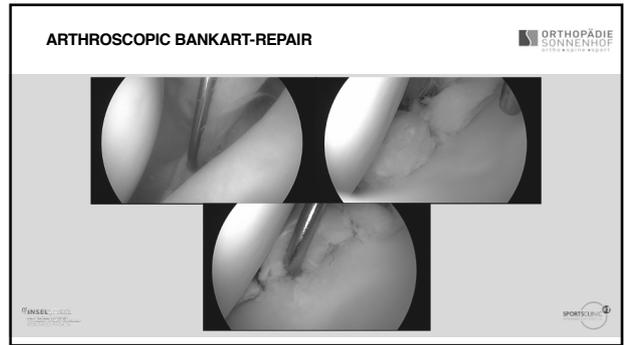


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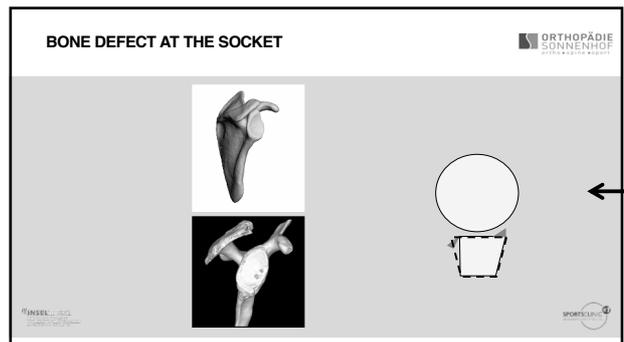
RISK FACTORS FOR RECURRENCE GLENOID DEFICIENCIES

- ... High rate of recurrence (48 of 53 patients) if there is a Perthes Bankart avulsion...
- ..even after Bankart stabilization
- ..often underestimated...

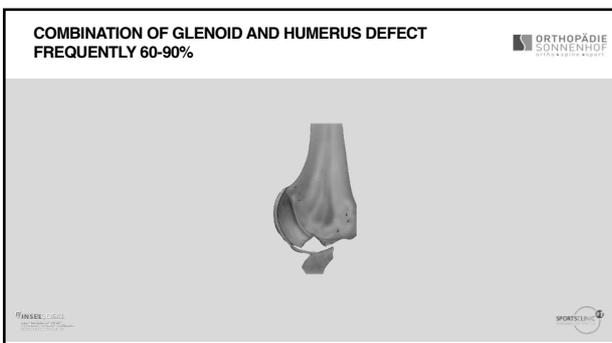
Taylor DC, AJSM; 1997
Burkhart SS: Arthroscopy; 2000
Tauber M: JSES; 2004
Boileau P, JBJS Am; 2006
Aufahrt A, JSES; 2013

ORTHOPÄDIE SONNENHOF
DIPLOM-ORTHOPÄDE
SPORTSCLINIK

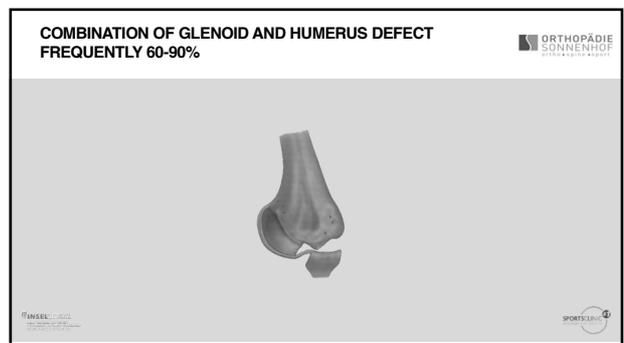
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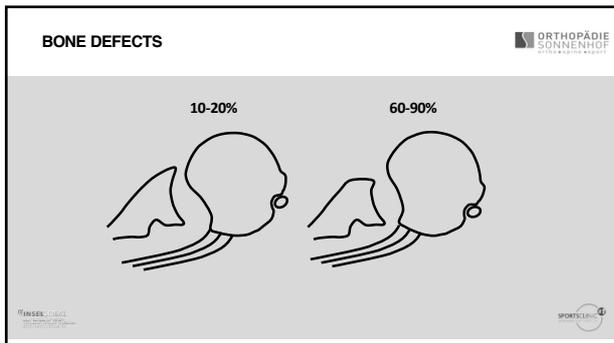
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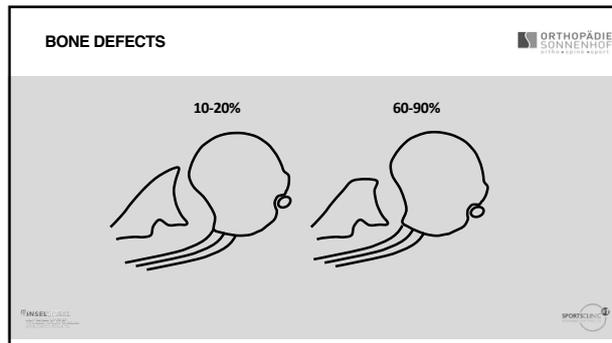
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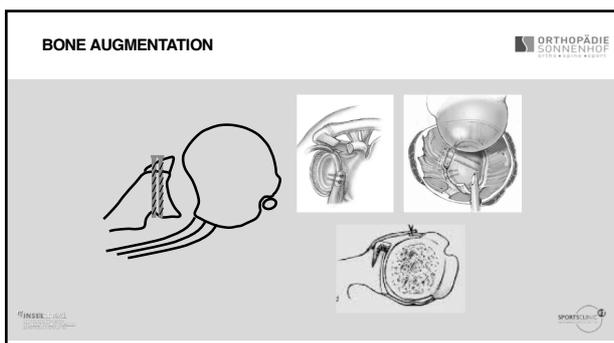
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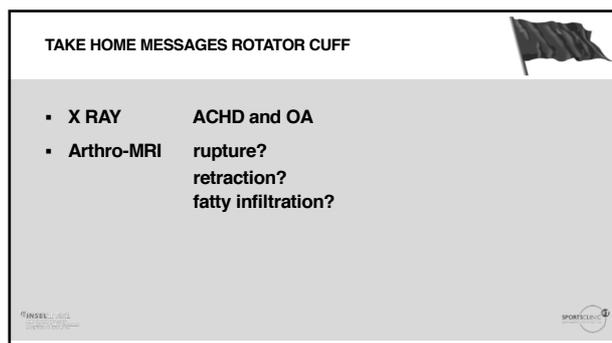
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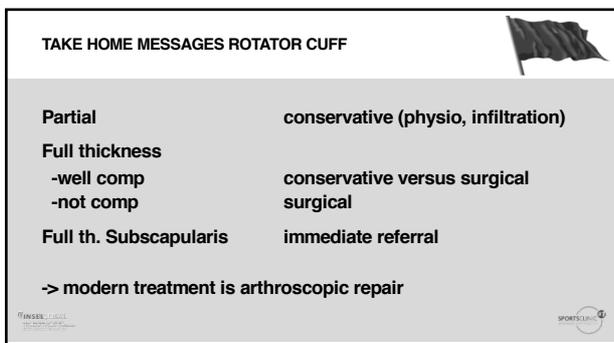
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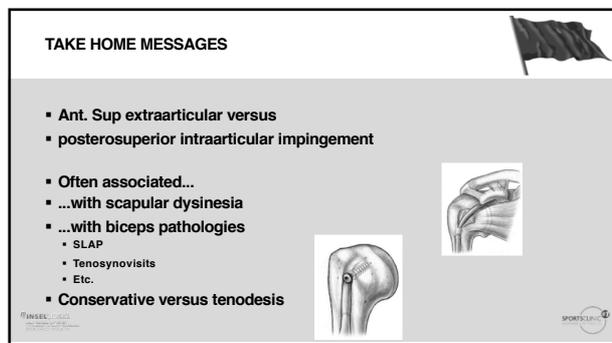
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ORIGIN IS FREQUENTLY AT THE BACK

ORTHOPÄDIE SONNENHOF
UNIVERSITÄT BERN



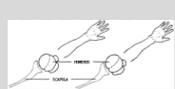
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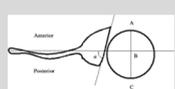
TAKE HOME MESSAGES THROWERS

increased humeral retrotorsion

- influences the GIRD
- clinical signs – loss of TROM - GIRD
- GIRD torsion difference



increased glenoid version



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TAKE HOME MESSAGES: INSTABILITY

- IGHL and bony congruency -> most important
- Think at the “unstable painful shoulder”
- Arthro-CT superior to Arthro-MRI
- Risk for recurrence and Bankart failure
 - young, men, overhead and contact sports, competition
 - bony lesions
- Studies of value only at > 5 years f-up

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TAKE HOME MESSAGES: INSTABILITY

- Arthroscopic Bankart procedure in selected patients
- In most bony lesions
 - Bone augmentation (Latarjet)
 - best results at long term follow up
 - Repair the labrum -> extraarticular bone block





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Thank you for your attention

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