

Sholder traction study

**Does seperation appears
during traction force at
the glenohumeral joint**

**A radiological
videoanalysis**

**Teacher's meeting
Utrecht 2014**





Introduction

- **Quantitativ analysis of traction**
- **Gokeler Alli et al, 2002**
 - **no significant increase of distance glenohumeral**
- **Mennell JB, 1945**
 - **seperation of the head of humerus is clearly visible**



Introduction

- **Prestudy**
 - **single investigation**
 - **non standardize conditions**
 - **clearly visible seperation**



Traktion glenohumeral





In vivo measurement of joint play motion

Purpose

- **Radiological analysis of traction under standardized conditions**
- **In maximally loose-packed position**
- **Videoanalysis**
- **Is there visible and significant separation between the head of humerus and the glenoid fossa**



In vivo measurement of joint play motion

- **Subjects**
 - **4 volunteers(2 female, 2 male, mean age 54)**
 - **right sholder**
 - **No signs of instability, no shoulder injuries**
 - **Normal ranged of motion**
 - **Righthanded**



Materials



- **Philips Inturis Allura**
- **High speed coronar-angiograph-system**
- **12 pictures/sec**



Otto Bock sholder brace





Tractionbelt

Stamina pocket balance





Electronical vernier calipers





Methods



- **Starting position:**
 - 60° abduction
 - Midposition ext/int rotation
 - No traction impuls
 - Scapula-fixation
 - Distance acromion-BV 40 cm



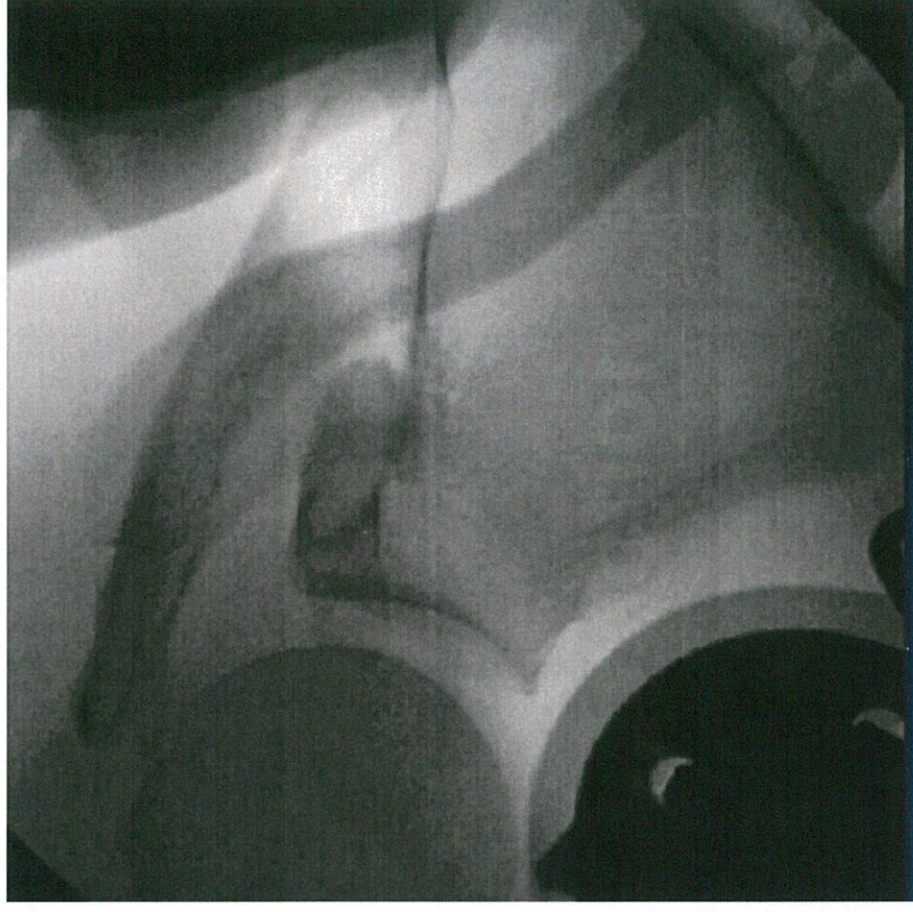
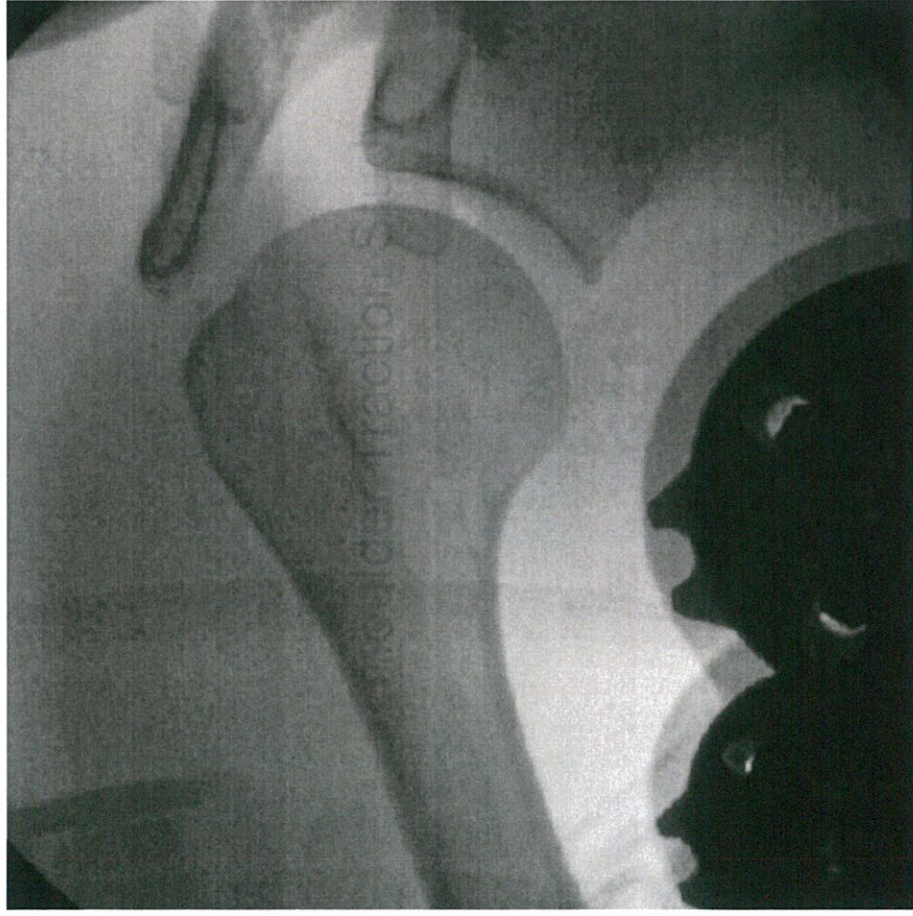
Methods



- **Tractionimpuls**
 - 90° to treatmentplane
 - Up to 18 kg tractionforce



Standardized Traction





Statistics

subject	Joint space without traction (mm)	Joint space with traction (mm)	Difference (mm)
1	8,20	11,01	2,91
2	9,92	13,33	3,41
3	7,64	10,49	2,85
4	6,43	9,52	3,09
mean	8,05	11,09	3,04
SD	1,45	1,62	0,28



Summary/Limitation

- **Traction movement is visualizable and measurable**
- **Large effect size**
- **In healthy, asymptomatic subjects**
- **Small sample size**
- **resting position is essential**
- **optimal fixation is necessary**



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