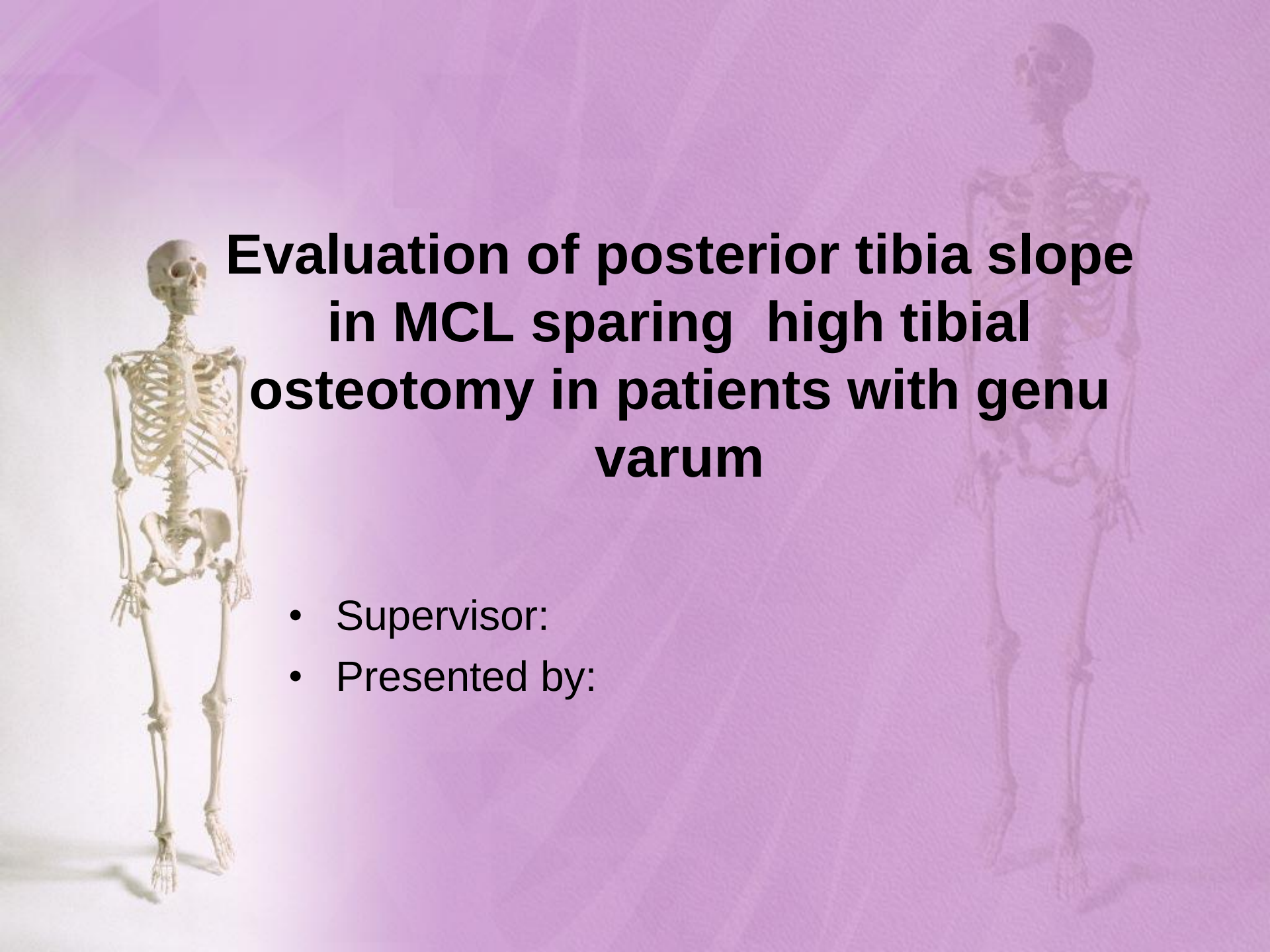

In the Name of God



Evaluation of posterior tibia slope in MCL sparing high tibial osteotomy in patients with genu varum

- Supervisor:
- Presented by:

Aim of study

- Determination of posterior tibia inclination before & after osteoporosis surgery above the tibia by Step Cut method
- Comparison of changes in posterior tibia inclination before and after upper tibial osteotomy with Step Cut method
- Determination of MLDFA & MPTA before and after upper tibial osteotomy by step cut method
- Determination of Insall salvati ratio before and after upper tibial osteotomy by step cut method

Introduction

- Genu varum: A type of knee deforty
- Side effects:

✓ Osteoarthritis

✓ Bow shaped knees

✓ Cartilage injury

✓ Degenerative disorders in the medial compartment of the knee joint

- Treatment:

✓ Proximal tibial osteotomy that is performed in young patients

Methods

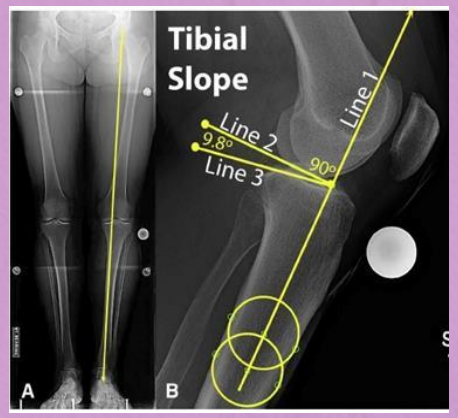
- A cross-sectional study during 2020-2021
- In Shafa hospital,Kerman,Iran
- On patients with Genu verum, needed HTO
- Surgery technique: proximal tibial osteotomy and fixation with plate and screw
- Analyzed by paired-samples t-test, Wilcoxon & spearsman, and Mann-Whitney

Posterior tibial slope

- Taking simple radiographic image in true lateral view before and after the operation of the upper tibia to Step Cut
- Drawing a tangent line on the upper articular surface of the tibia
- Drawing The other line along the dorsal axis of the tibia and a line perpendicular to it
- measurements were performed by orthopaedic surgery resident.

Range of motion of the knee:

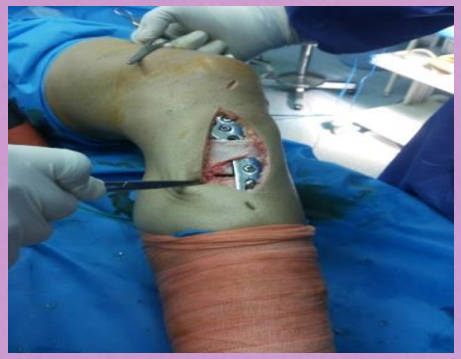
- Patella tendon length to the length of the patella was named Insall-Salvati ratio
- the most commonly used measurement determine patellar height.
- Tibial tuberosity abnormalities (e.g. Osgood-Schlatter disease, osteotomies) affect this index
- The normal range: 0.8-1.2



Step cut Method

- Opening skin and subcutaneous from the edge of knee joint line to the distal
- Opening the superior and inferior aponeurosis of this flap
- Cutting longitudinally from below the gastrocnemius flap to the proximal till below the tibial tuberosity
- Completing With valgus force and fracture of lateral cortex the osteotomy
- Determining The correction degree by entering the needle catheter tip into this gap
- Fixing the plate and determining the degree With a cutter wire from ASIS to mid tibial plate

Step cut Method



Result

- 21 patients were enrolled
- 11 men
- 10 women
- Mean age 36.19 ± 10.17

Demographic and angle characteristics **(MLDFA,solpe pre op and post op, Insall-Salvati _ratio)**

	Range(min-max)	Mean± SD
Age	21-55	36.19 ± 10.17
BMI	19.1-32.1	25.83± 3.58
mLDFA(degree)	80-92	89 ±2.64
Slop_Pre OP(degree)	8-15	11.48 ± 1.94
Slop_Post OP(degree)	8.3-17	11.52 ± 2.15
Insall-Salvati _ratio_pre	0.7-1.2	0.92 ± 0.13
Insall-Salvati _ratio_post	0.6-1.1	0.90 ± 0.13

Using the results of Kolmogorov-Smirnov test

- ✓ MLDFA and Slop-pre op have a normal distribution, at a significance level of 0.05
- ✓ both parametric and non-parametric methods are used, in the comparative hypotheses

relation between delta-insall ratio , delta-slop and gender.

		N	Mean Rank	p-value
Delta_Insull	Female	11	10.73	0.829
	Male	10	11.30	
	Negative Ranks	7[a]	10.07	0.895
	Positive Ranks	9[b]	7.28	
Delta_Slop	Female	11	9.86	0.368
	Male	10	12.25	
	Negative Ranks	9[d]	10.17	0.466
	Positive Ranks	8[e]	7.69	

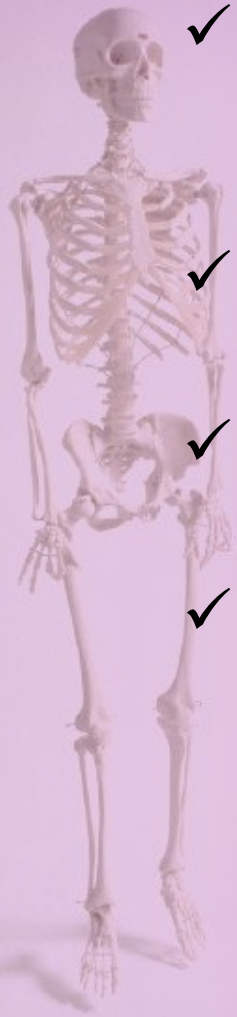
Test result with respect to p-value> 0.05

- ✓ Observing no differences between the two variables Slop and insull in the mean rank value before and after surgery
- ✓ Observing a significant level of 0.05, in the Slop variable the value of p-value = 0.368> 0.05 by using non-parametric Mann-Whitney test
- ✓ Observing no significant difference in the amount of changes for both men and women after surgery
- ✓ resulting in no significant difference in the amount of change between the male and female group

correlation between demographic variables and angles.

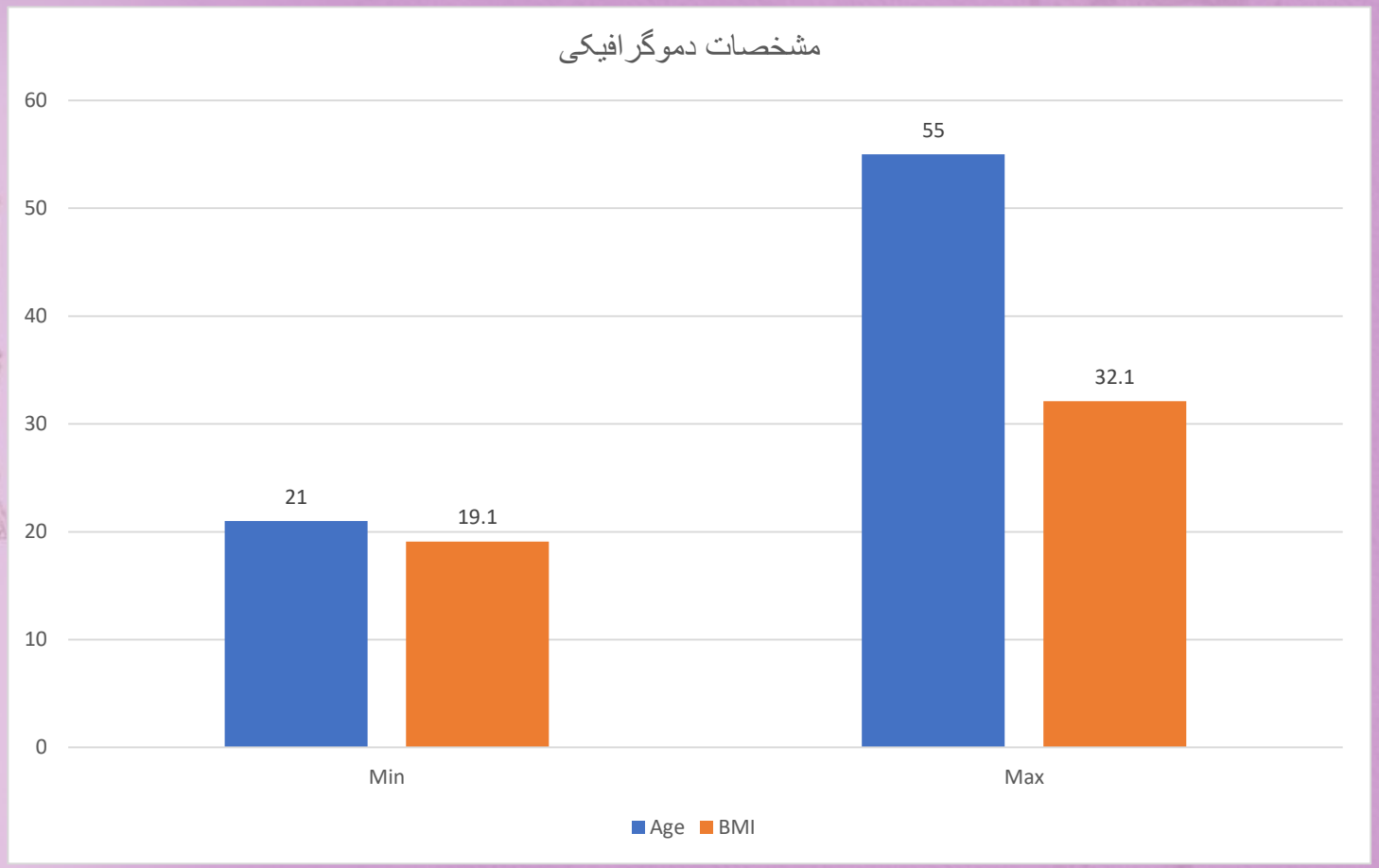
		Age	BMI
Delta-insall	Correlation Coefficient	-0.349	-0.317
	p-value	0.121	0.161
Delta-slope	Correlation Coefficient	0.301	-0.063
	p-value	0.185	0.787

Spearman tes

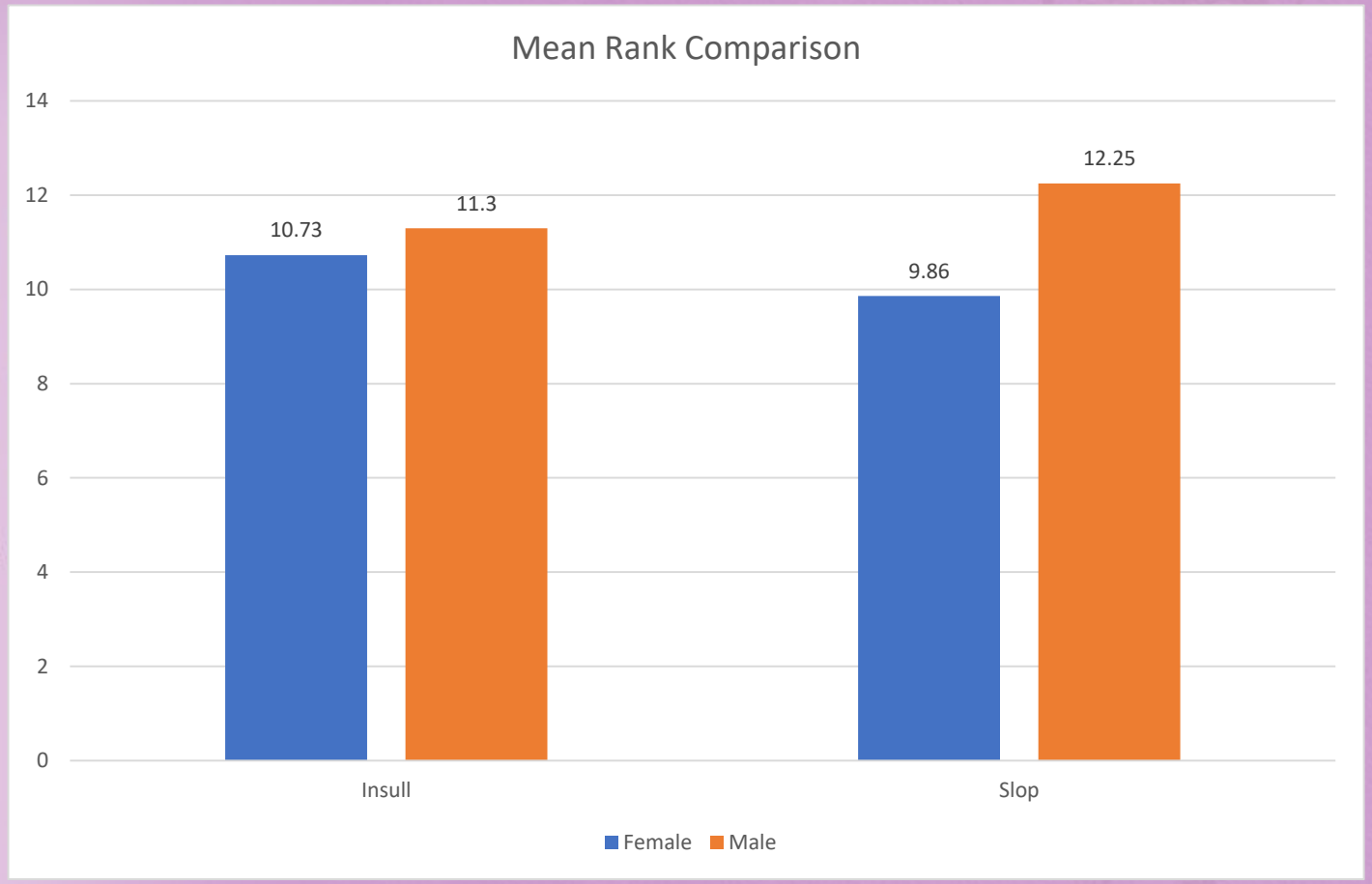


- ✓ Observing that the significant value of the relationship between Delta-slop and age is equal to p-value = 0.185> 0.05
- ✓ amount of insull changes is not affected by age and has changed in the same way for all ages
- ✓ for the BMI variable, it is observed that a significant value of p-value = 0.787> 0.05
- ✓ BMI has no effect on slop changes after surgery that is similar to correlation between delta-slope, age and BMI

Demographic characteristics of patients and minimum and maximum age range and BMI



Mean statistical rank of Insull ratio and posterior tibial tilt in men and women



In this study:

- We surveyed PTS in patients with genu varum in Iran for the first time on 431 people
- In this study we showed that there was no statistically significant relationship between PTS and age and gender
- In a study conducted on 39 women and 8 men it showed that there is no statistical correlation between preoperative varus and the changes posterior tibial slope after surgery
- In the present study, Insall-Salvati index showed no significant difference before and after the treatment. This means patellar height had no significant change.

Discussion

- Main purpose of High Tibial Osteotomy(HTO):
- ✓ Correction of genu varum
- ✓ Hip-knee-ankle angle
- ✓ Preventing progression of destruction of the medial compartment
- In this study, PTS increased after HTO that this increase was not statistically significant difference between men and women. In addition, it showed that this increase did not have significant relationship with age and BMI.

conclusion

- In this study, we surveyed pre and post operation change of PTS, MLDFA and ISI in high tibial osteotomy with step cut method that is the first study in the world. So showed that step cut HTO increase the PTS that is not statistically significant and this does not have relation with age and BMI.

Sources

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- Moore, K.L., A.M. Agur, and A.F. Dalley, *Essential clinical anatomy.* 2015.
- Nagel, A., J.N. Insall, and G.R. Scuderi, *Proximal tibial osteotomy. A subjective outcome study.* JBJS, 1996. **78**(9): p. 1353-8.


THANKS FOR YOUR ATTENTION