

*dr. Mitja Bračič*

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DR. MITJA BRAČIČ

# HITOP 4 TOUCH THERAPY



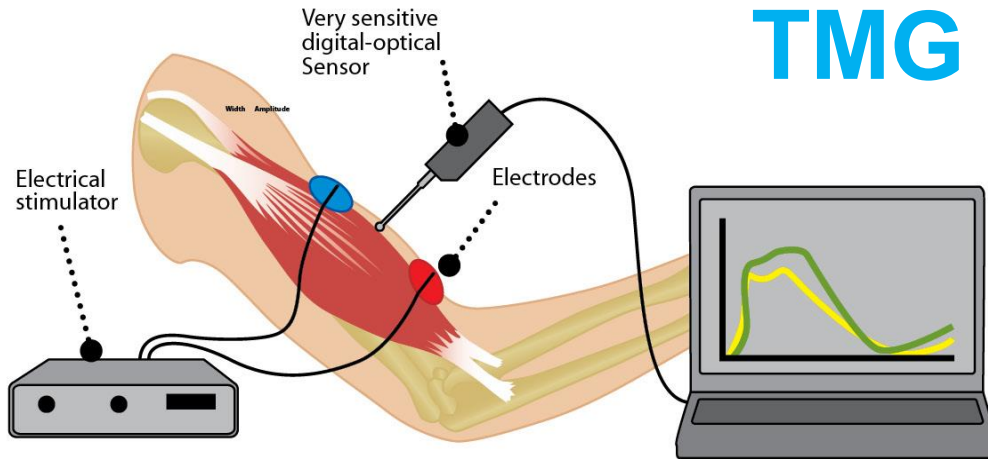
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# TMG MEASUREMENTS



## Five simple steps:

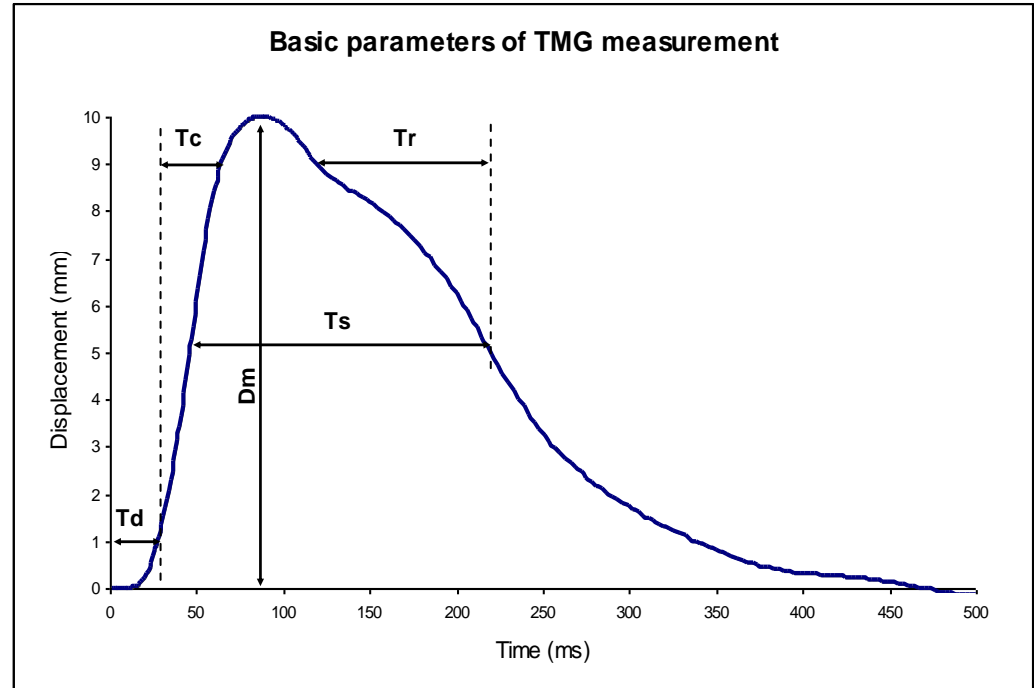
1. Place electrodes on the muscle belly.
2. Place specially-developed sensor on skin above muscle we wish to measure – the sensor is designed to register the muscle contraction.
3. The muscle contraction is induced artificially with an electro stimulator.
4. The contraction of the muscle under isometric conditions results in radial displacement of the muscle belly which displaces sensor tip. Radial displacement is recorded as a function of the elapsed time.
5. The sensor is connected to a computer where a specially designed software plots the radial displacement of the sensor rod against time.



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# TMG BASIC PARAMETERS

- Radial displacement (mm)
- Delay time (ms)
- Contraction time (ms)
- Sustain time (ms)
- Relaxation time (ms)



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# TMG MEASUREMENTS



SARAH HENDRIKSON

SKIJUMPING WORLD  
CHAMPION AFTER ACL  
SURGERY

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# CASE STUDIES

**HITOP THERAPY – JUMPING KNEE AND ACL REHABILITATION**

**RESULTS AFTER 10 THERAPIES**

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# BICEPS FEMORIS – 54% ON WEAK LEG

## SOCCER PLAYER – JUMPING KNEE

Tc (Contraction time)

Date	Left	%	Right	%	Sym [%]
28.03.2016	65.32	0	32.00	0	49
21.04.2016	29.84	-54	29.72	-7	100



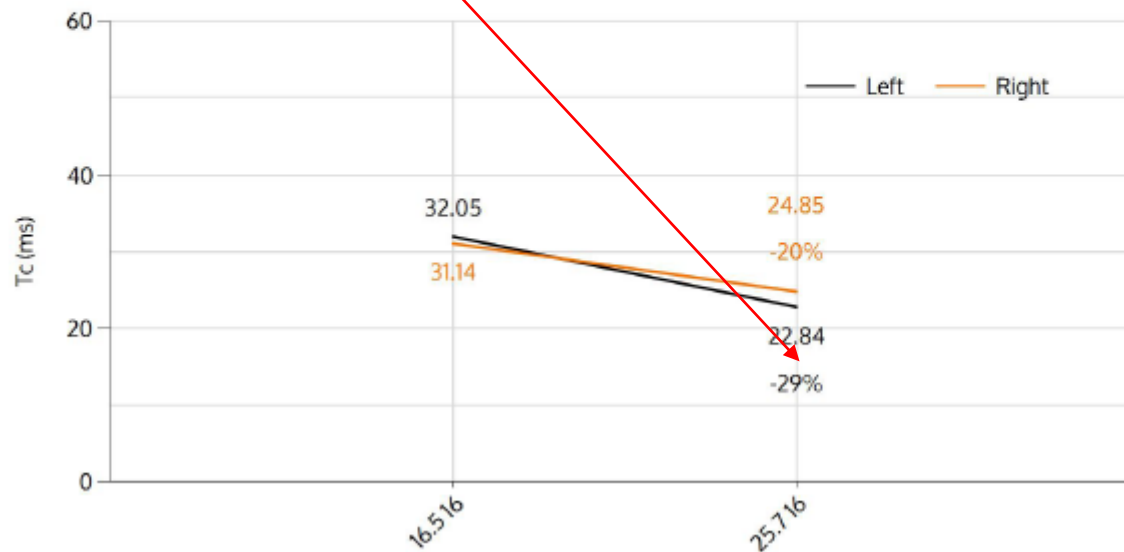
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# BICEPS FEMORIS – 29% ON WEAK LEG

## ALPINE SKIING – ACL TEAR – PREPARATION FOR SURGERY

Tc (Contraction time)

Date	Left	%	Right	%	Sym [%]
16.05.2016	32.05	0	31.14	0	97
25.07.2016	22.84	-29	24.85	-20	92



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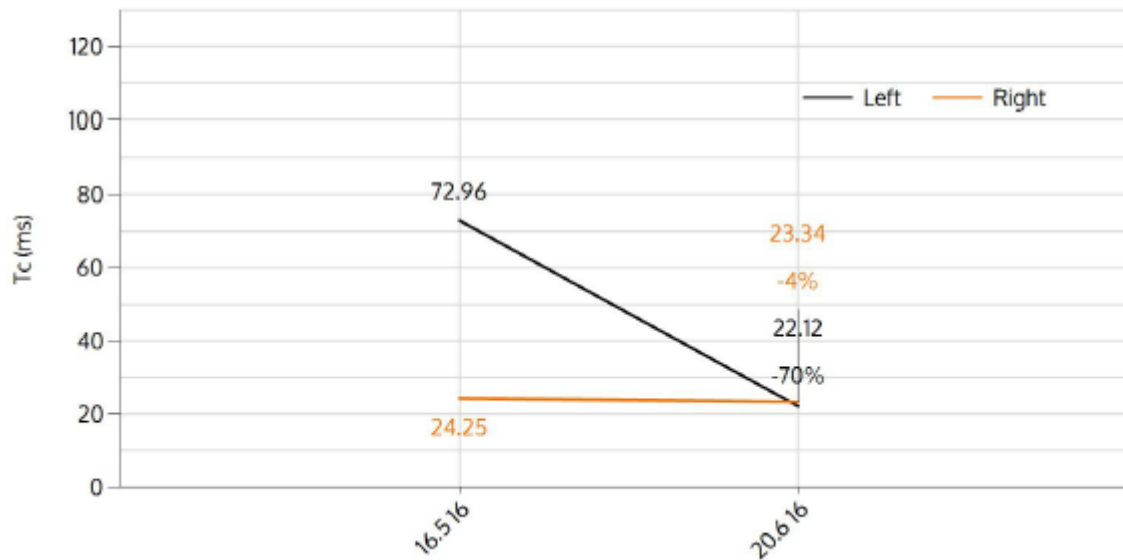


# BICEPS FEMORIS – 70% ON WEAK LEG

## VOLLEYBALL PLAYER – JUMPING KNEE

Tc (Contraction time)

Date	Left	%	Right	%	Sym [%]
16.05.2016	72.96	0	24.25	0	33
20.06.2016	22.12	-70	23.34	-4	95



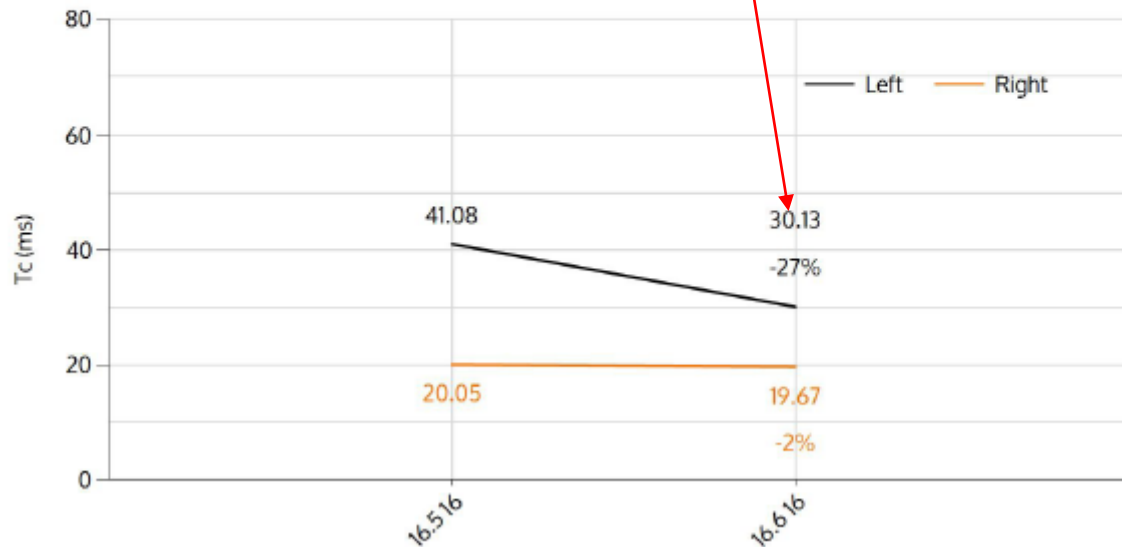
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# BICEPS FEMORIS – 27% ON WEAK LEG

## VOLLEYBALL PLAYER – JUMPING KNEE

Tc (Contraction time)

Date	Left	%	Right	%	Sym [%]
16.05.2016	41.08	0	20.05	0	49
16.06.2016	30.13	-27	19.67	-2	65



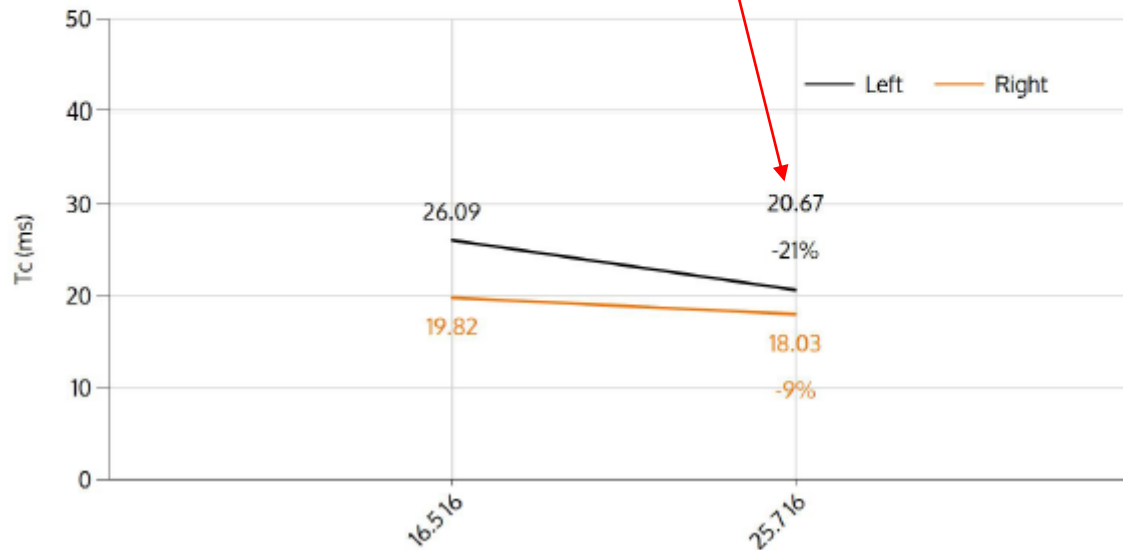
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# VASTUS MEDIALIS- 21% ON WEAK LEG

## BASKETBALL PLAYER - JUMPING KNEE

Tc (Contraction time)

Date	Left	%	Right	%	Sym [%]
16.05.2016	26.09	0	19.82	0	76
25.07.2016	20.67	-21	18.03	-9	87



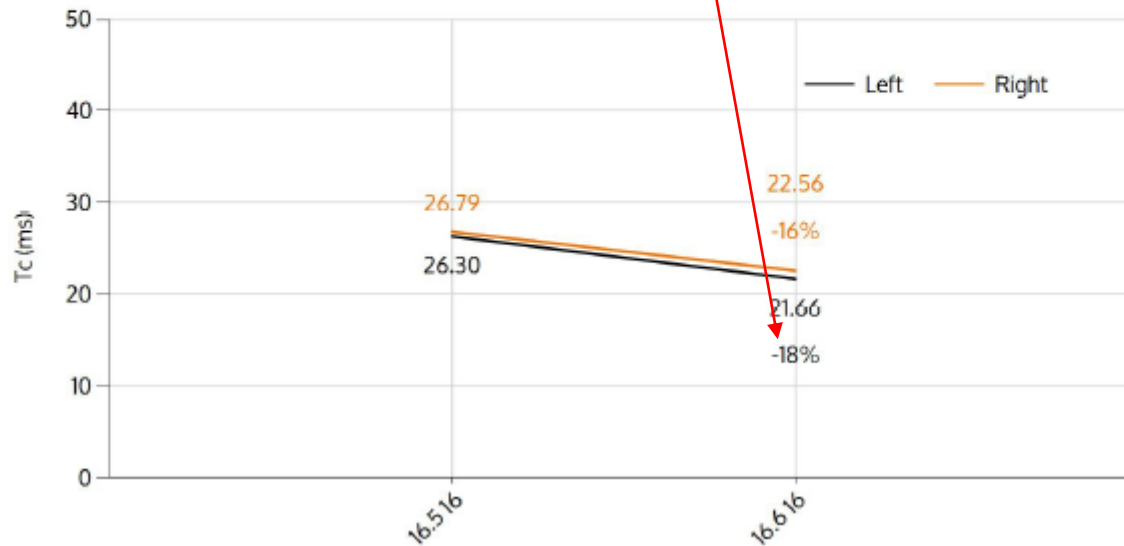
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# VASTUS MEDIALIS- 18% ON WEAK LEG

## VOLLEYBALL PLAYER – JUMPING KNEE

Tc (Contraction time)

Date	Left	%	Right	%	Sym [%]
16.05.2016	26.30	0	26.79	0	98
16.06.2016	21.66	-18	22.56	-6	96



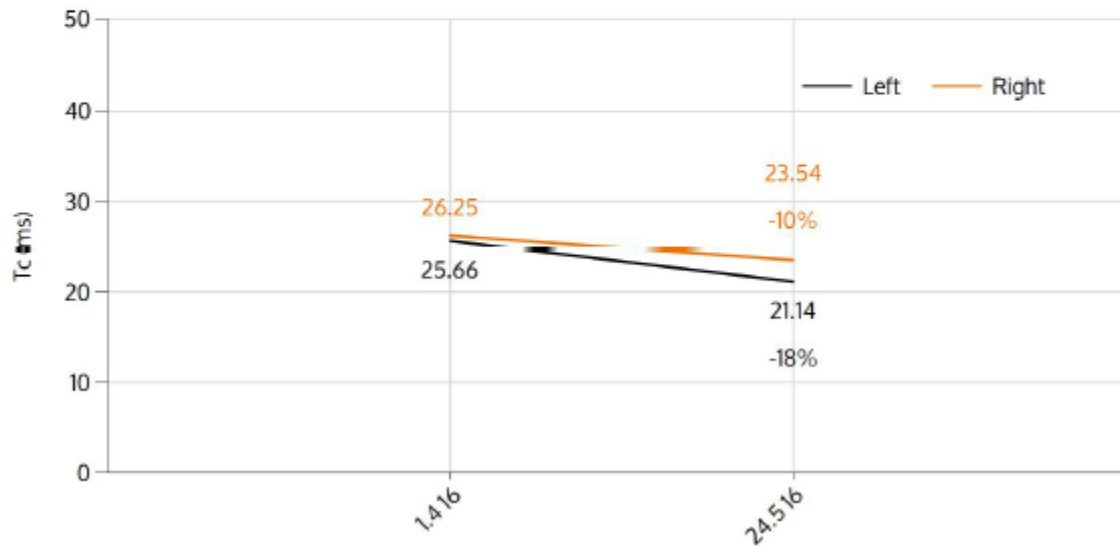
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# VASTUS MEDIALIS- 18% ON WEAK LEG

## BASKETBALL PLAYER – ACL TEAR – AFTER SURGERY

Tc (Contraction time)

Date	Left	%	Right	%	Sym [%]
01.04.2016	25.66	0	26.25	0	98
24.05.2016	21.14	-18	23.54	-10	90



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# HITOP CONGRESS



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**LONGITUDINAL RESEARCH**

**HITOP 4 TOUCH**

**ACL SURGERY**

**2 YEARS STUDY**

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# RESEARCH PROGRAMME

## 1. HITOP GROUP (N 25)

TMG MEASUREMENTS BEFORE AND AFTER 10 THERAPIES WITH HITOP

## 2. CONTROL GROUP (N 25)

TMG MEASUREMENTS BEFORE AND AFTER 2 WEEKS OF TRAINING (KINEZIO THERAPIES)

### MUSCLES:

1. BICEPS FEMORIS
2. RECTUS FEMORIS
3. VASTUS MEDIALIS

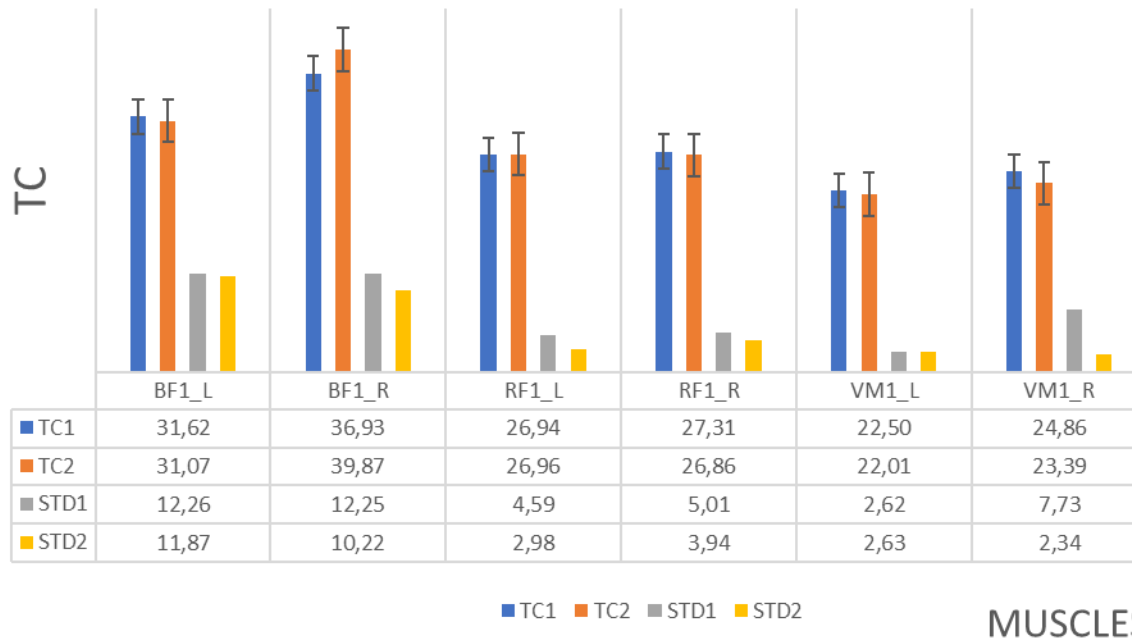
  
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# RESULTS

## GROUP 2 – NO HITOP THERAPIES

### GROUP 2 BEFORE & AFTER TRAINING

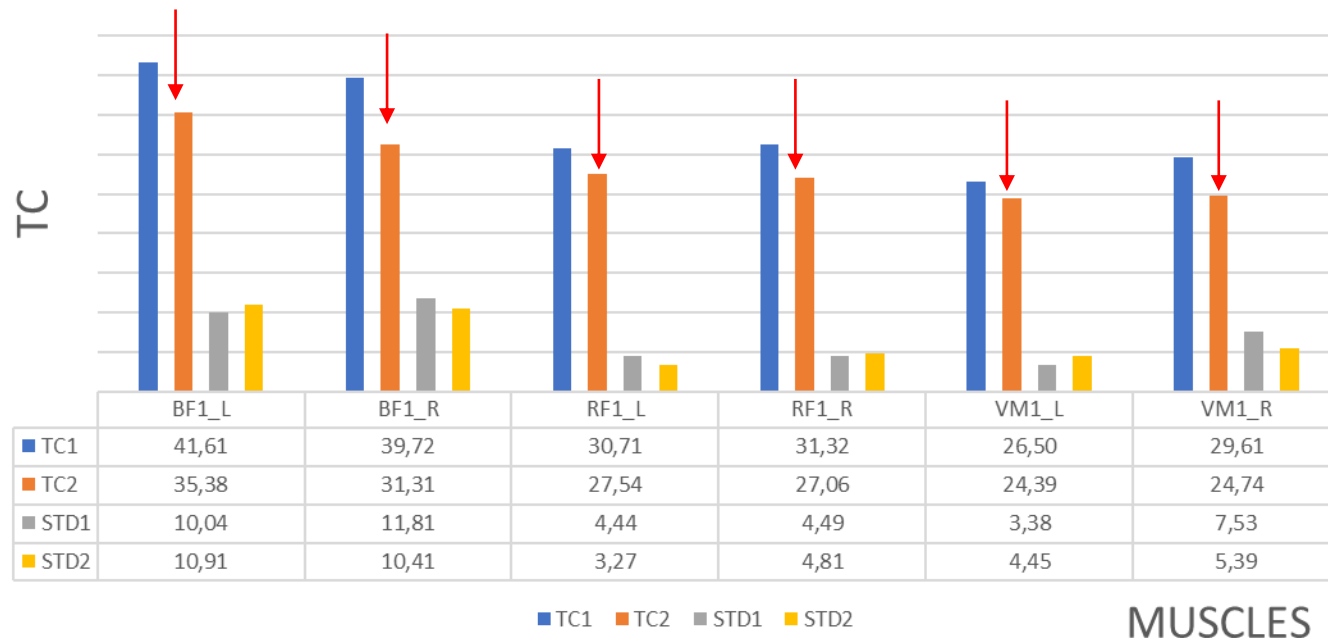


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# RESULTS

## GROUP 1 – HITOP THERAPIES

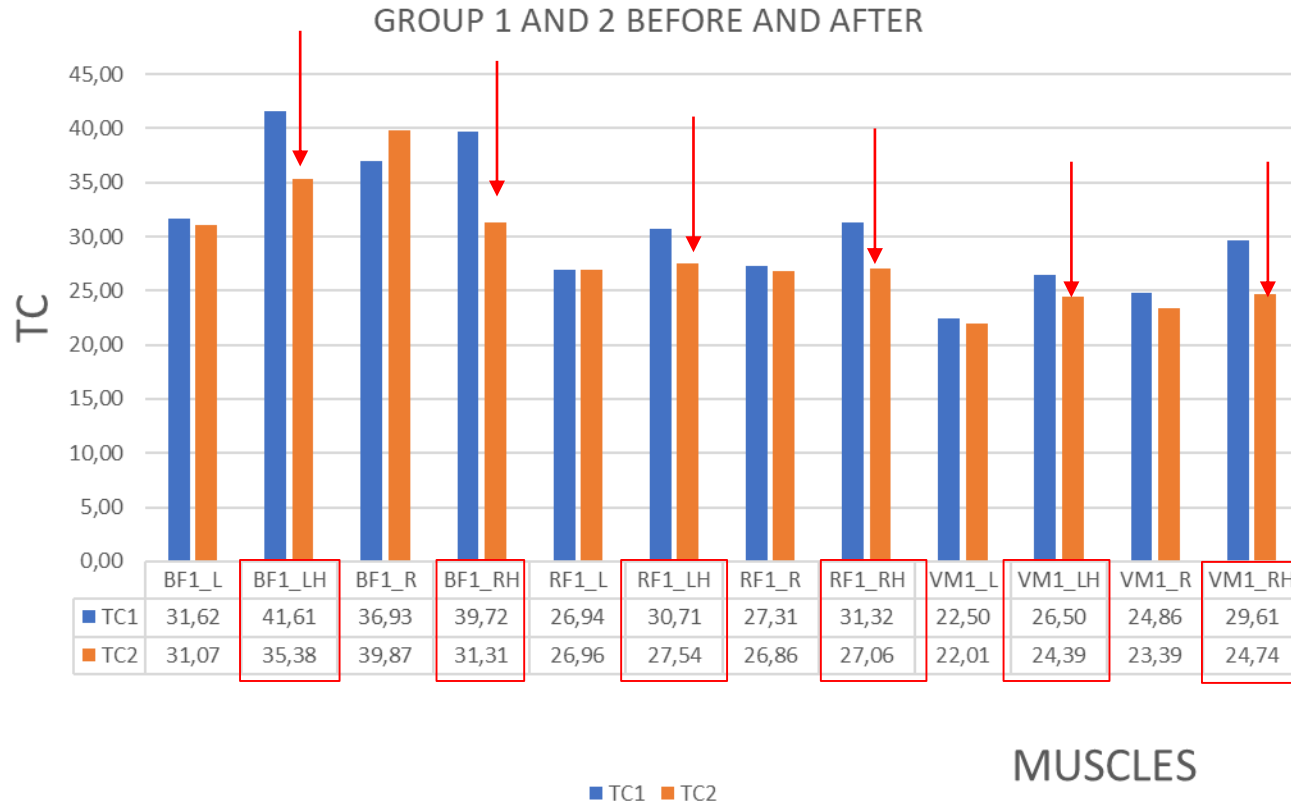
### GROUP 1 BEFORE & AFTER HITOP THERAPIES



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# RESULTS

## GROUP 1 & 2 - COMPARATION



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# TINE URNAUT – VOLLEY BALL TRENTINO EUROPEAN CHAMPIONSHIPS 2nd PLACE



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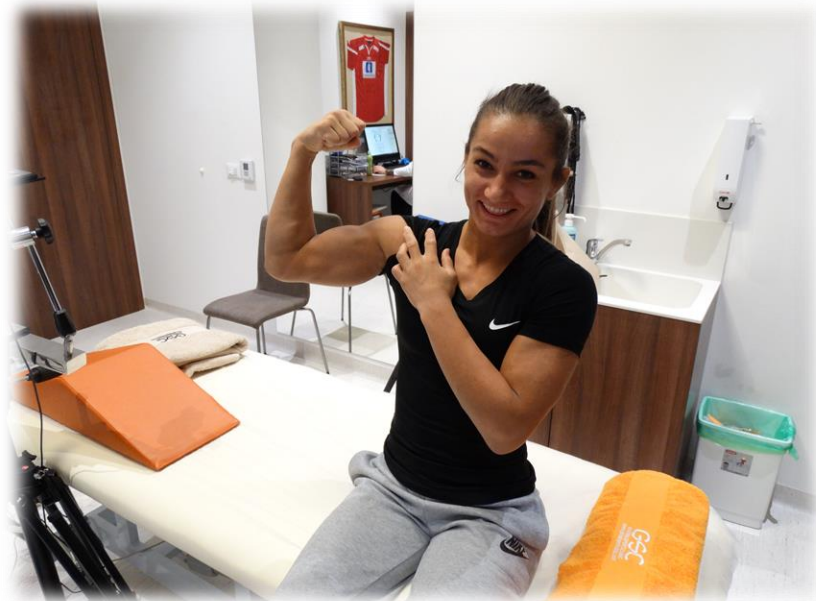
# LUKA JANEŽIČ – 400 M (44.84 SEC – RIO) EUROPEAN CHAMPION U23



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# MAJLINDA KELMENDI – JUDO OLYMPIC CHAMPION AND 2 TIMES WORLD CHAMPION



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# BASKETBAL TEAM SLOVENIA (PHOENIX SUNS) ZORAN DRAGIČ - ACL



*dr. Mitja Jabračič*

# BASKETBAL TEAM SLOVENIA EUROPEAN CHAMPIONS 2017 – MIAMI HEAT – GORAN DRAGIČ



*dr. Mitja Jabračič*



# CONCLUSIONS

1. Patients after ACL in **Group 1 (Hitop therapies)** have significantly better TMG results (time contraction) than Group 2 in all muscles (biceps femoris, vastus medialis, rectus femoris)

## 2. Time contraction of muscles

BF\_left 15% better  
BF\_right 21% better  
RF\_left 11 % better  
RF\_right 14 % better  
VM\_left 8 % better  
VM\_right 16 % better



**Aljaž Bedene (Tennis ATP 45)**

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HVALA!

**THANK YOU!**