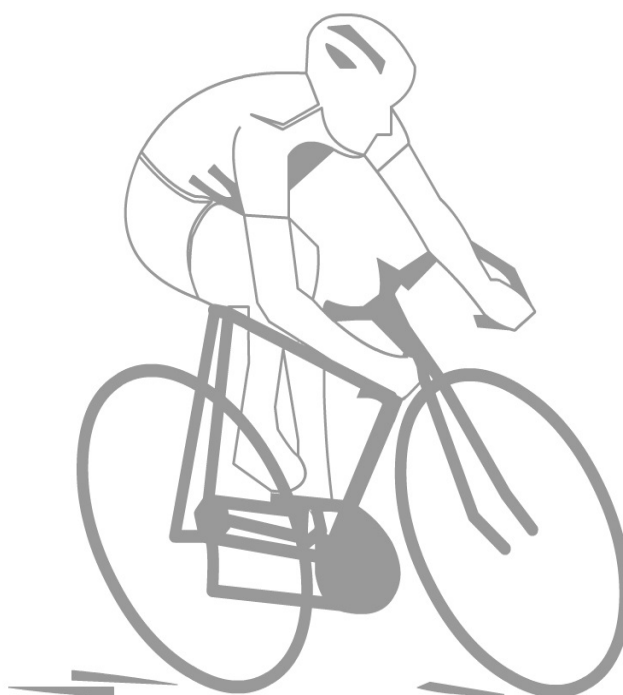


## **BIKE PROTOCOL**

**Kinematic analysis and muscle functional evaluation**



### **Patient Details:**

<b>SURNAME:</b>	RODRIGUEZ SOTELO
<b>NAME:</b>	JOSE LUIS
<b>BIRTHDAY:</b>	6/11/1979
<b>SESSION DATE:</b>	21/10/2024

# KINEMATIC ANALYSIS

## Dynamic Posture on Frontal Plane

ANGLE (°)	FRONTAL INCLINATION
SHOULDERS:	-3.4 ± 1.9
PELVIS:	0.8 ± 3.7

value < 0° LEFT shoulder and LEFT pelvis in UP position

value > 0° LEFT shoulder and LEFT pelvis in DOWN position

## Dynamic Posture on Transversal Plane

ANGLE (°)	TRANSVERSAL ROTATION
SHOULDERS:	-5.3 ± 3.8
PELVIS:	-3.5 ± 3.6

value < 0° LEFT shoulder and LEFT pelvis BACKWARD

value > 0° LEFT shoulder and LEFT pelvis FORWARD

### Legend:

#### Frontal Inclination

SHOULDERS



PELVIS



#### Transversal Rotation

SHOULDERS

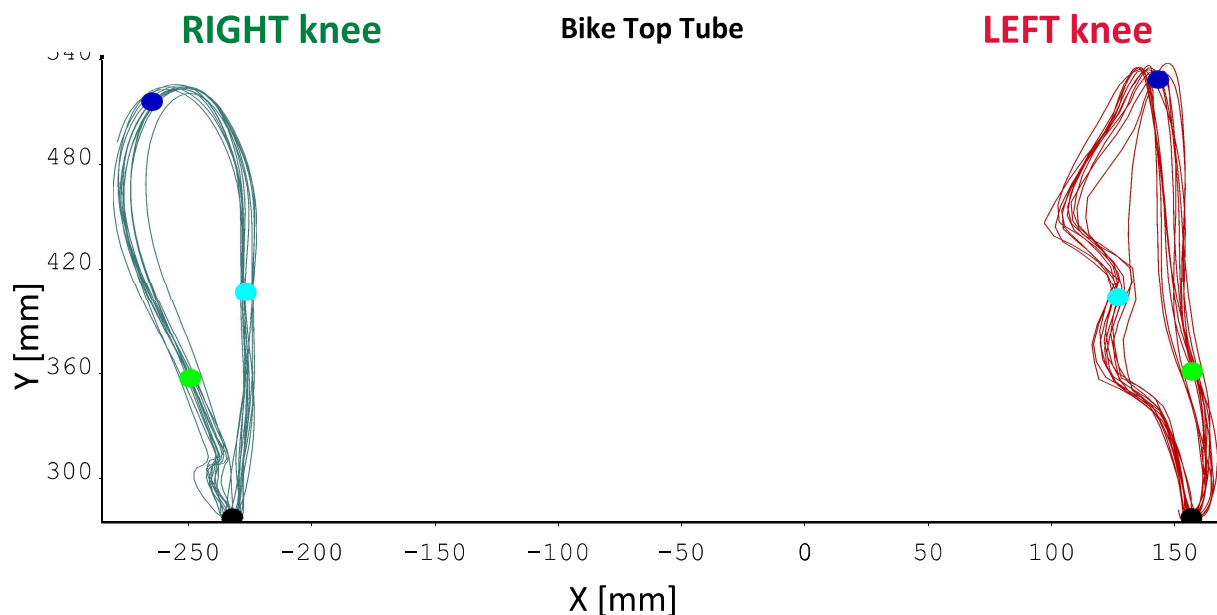


PELVIS



# KINEMATIC ANALYSIS

## KNEE Movement on FRONTAL Plane



### Knee horizontal distance from the bike top tube

DISPLACEMENT (mm)	RIGHT knee	LEFT knee
POSITION at 0°	-264.8	143.2
POSITION at 90°	-226.9	126.9
POSITION at 180°	-232.4	156.6
POSITION at 270°	-249.4	156.9

Legend:

Frontal plane

KNEE



# KINEMATIC ANALYSIS

## Dynamic Posture on Sagittal Plane

### RIGHT SIDE




### LEFT SIDE



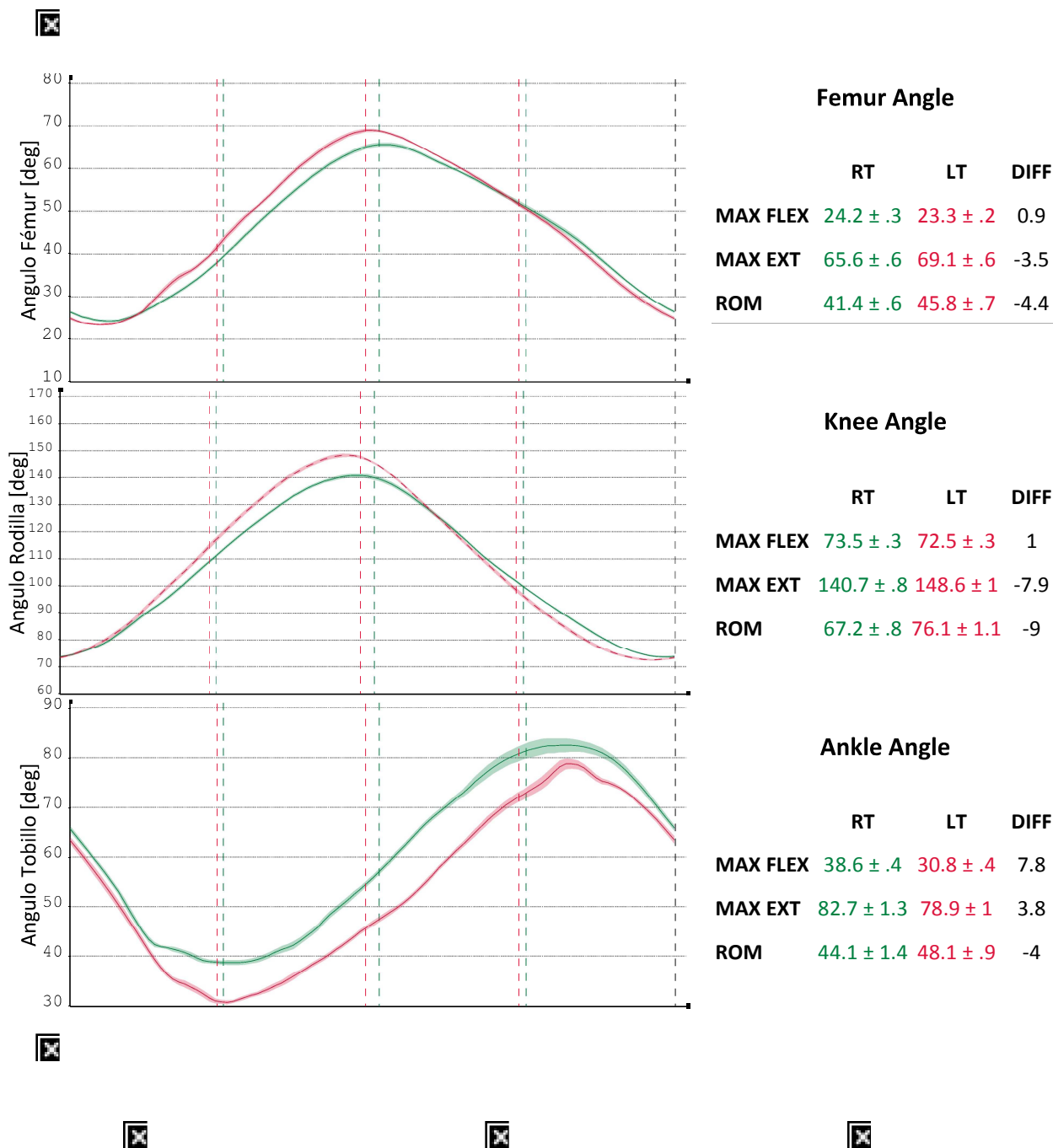
ANGLE (°)	RIGHT MEAN VALUE	LEFT MEAN VALUE	DIFFERENCE
PELVIS	40.3 ± 2.3	40.2 ± 4.4	0.1
TRUNK	39.4 ± 2.2	41 ± 1.9	-1.6
UNDERARM	78.2 ± 3.3	69.8 ± 2.8	8.4
ELBOW	116.7 ± 4.7	115.4 ± 3.8	1.3

### Legend:

PELVIS	TRUNK	UNDERARM	ELBOW
			

# KINEMATIC ANALYSIS

## RIGHT and LEFT Legs on Sagittal Plane



FEMUR

KNEE

ANKLE

# KINEMATIC ANALYSIS

## Maximum Pushing Phase

(when the feet are aligned horizontally)

### RIGHT SIDE



### LEFT SIDE



ANGLE (°)	RIGHT MEAN VALUE	LEFT MEAN VALUE	DIFFERENCE
KNEE MOVING BACK	-3.5 ± .2	-.5 ± .5	-3
KNEE (POPLITEAL)	111.2 ± .6	114.8 ± 1.1	-3.6
ANKLE	38.7 ± .4	31.1 ± .5	7.6
PUSHING ANGLE	69.3 ± .1	68.2 ± .1	1.1

RPM = 73

### Legend:

KNEE MOVING BACK



KNEE (POPLITEAL)



ANKLE

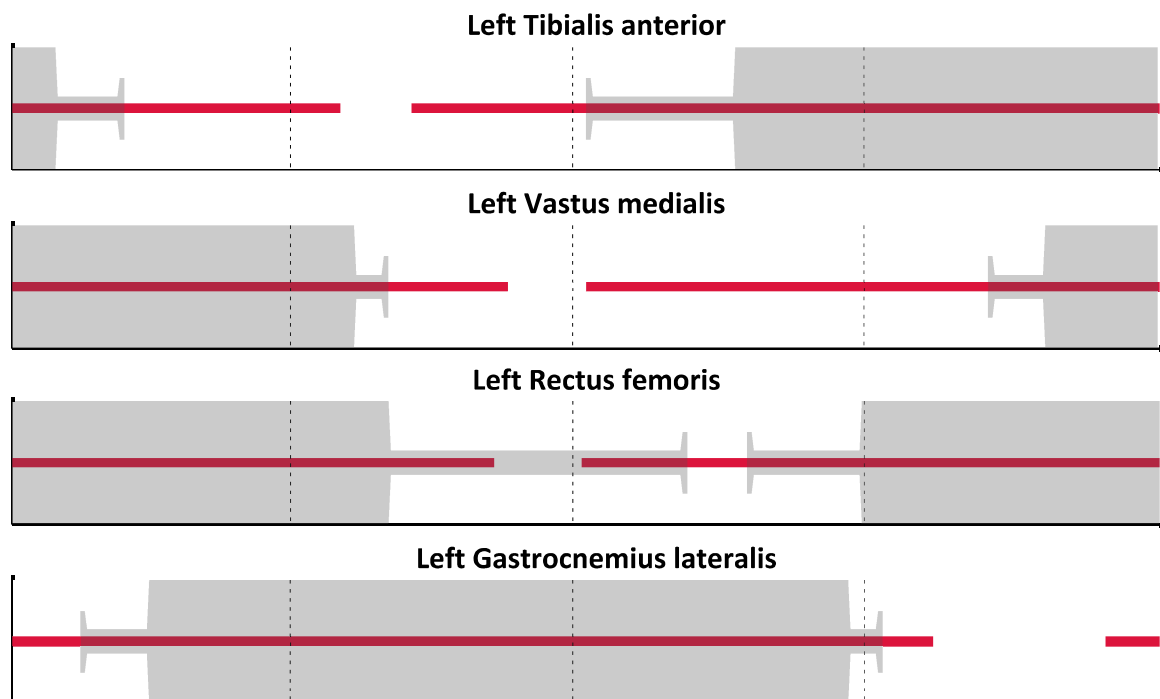
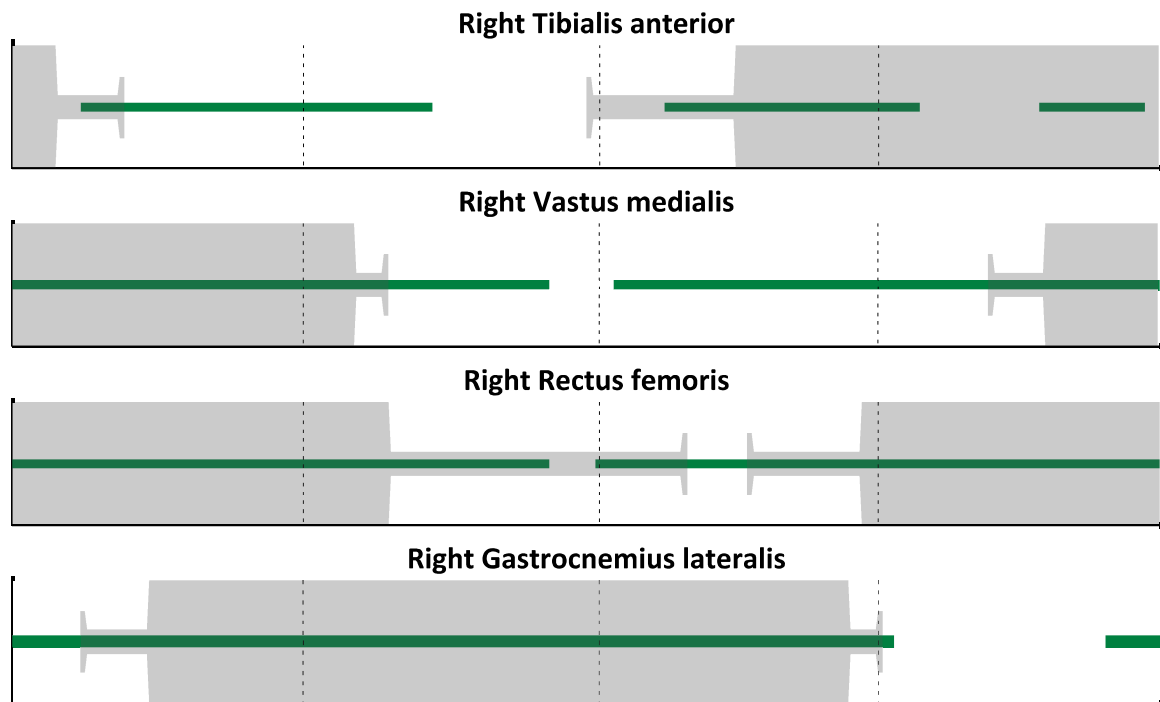


PUSHING ANGLE



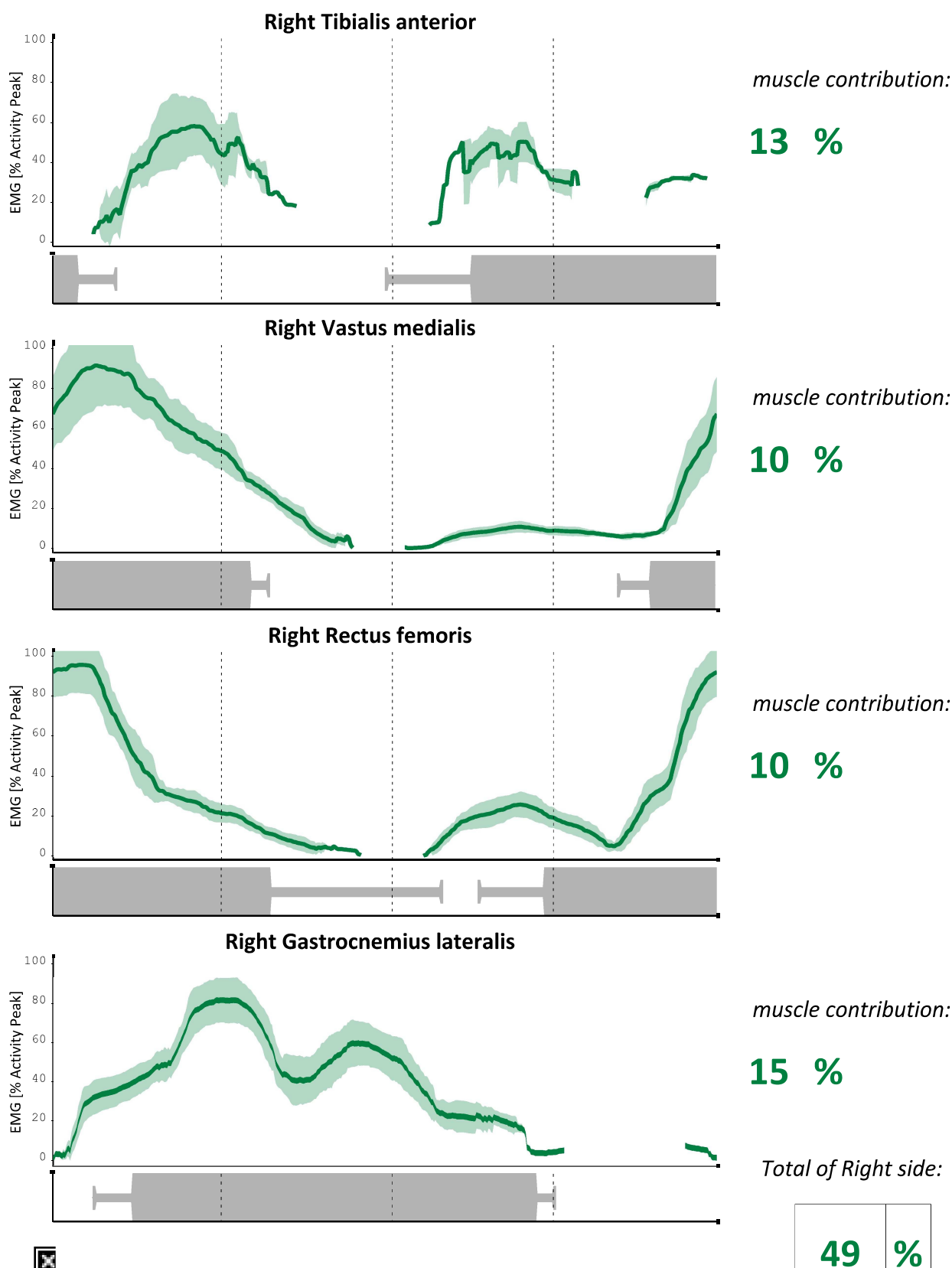
# EMG ANALYSIS

## Muscle Coordination



# EMG ANALYSIS

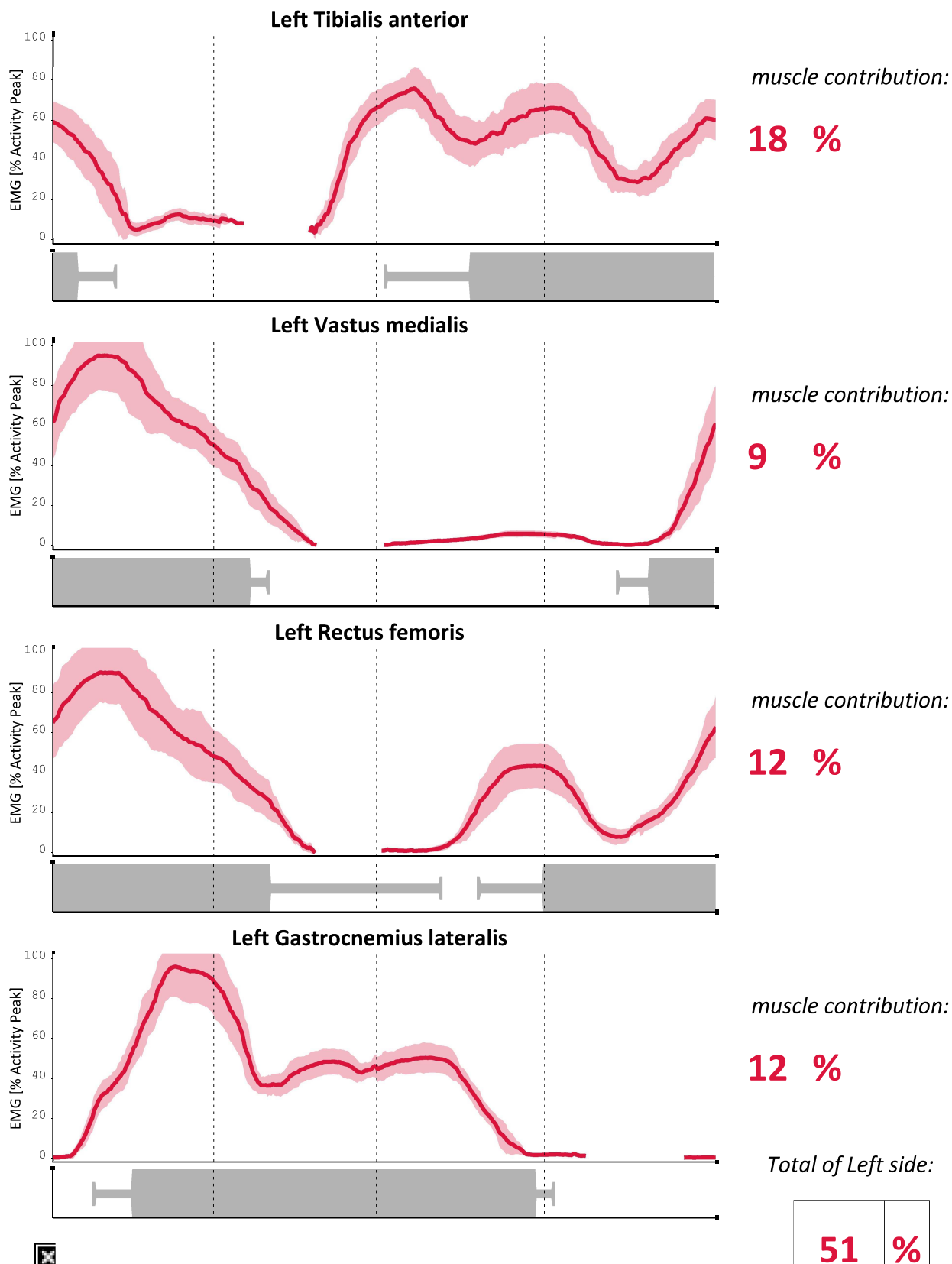
## Amplitude Analysis: normalization on Peak





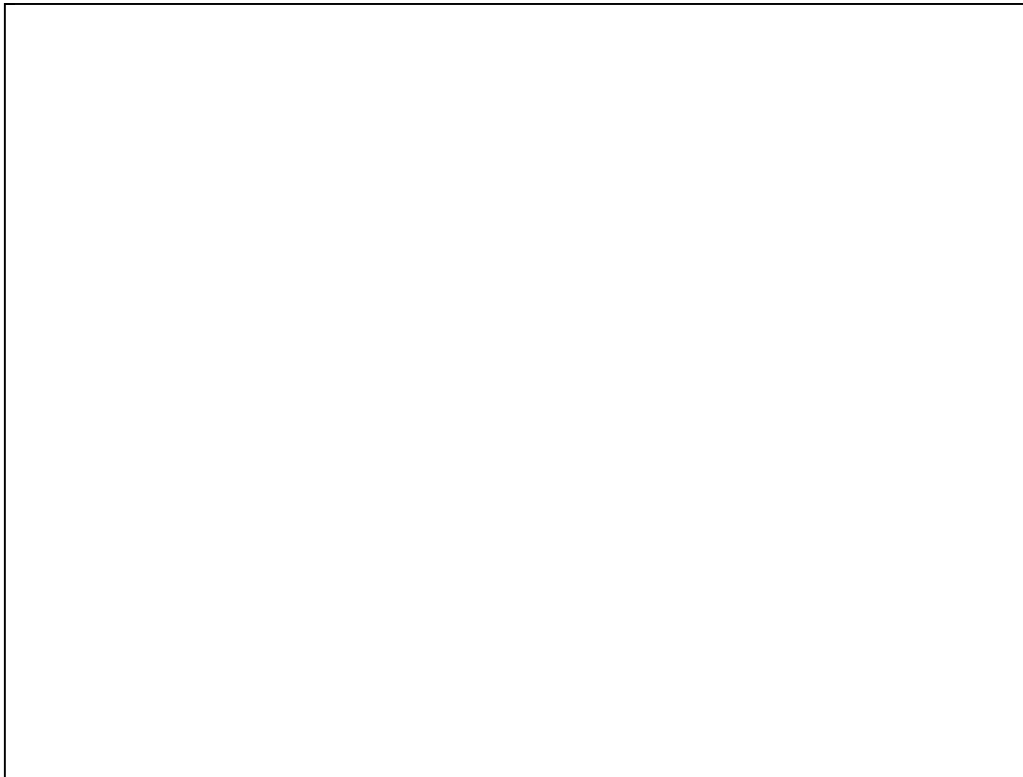
# EMG ANALYSIS

## Amplitude Analysis: normalization on Peak



# VIDEO ANALYSIS

RIGHT View



LEFT View

