

Anterior saddle conflict in women cycling : a case study

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Saddle Conflict

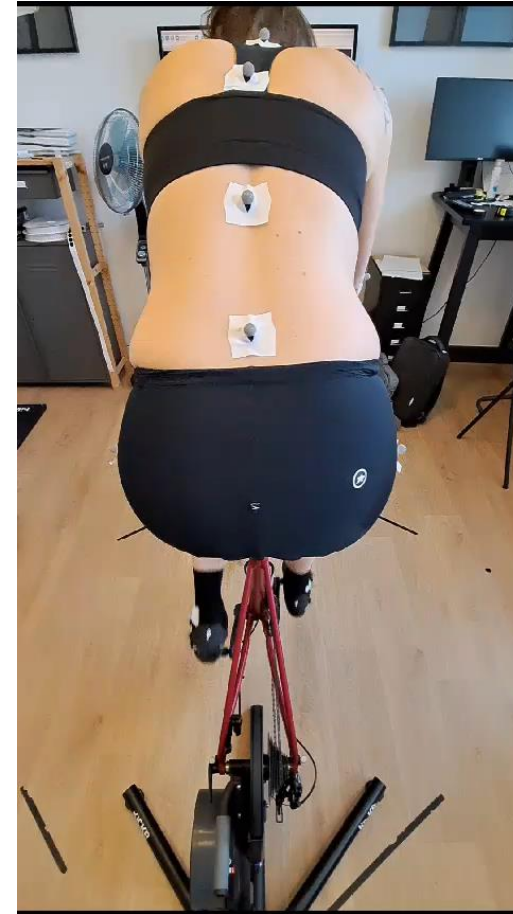
Direct or Indirect pain/injury provoked by the seated position

Causes of the saddle Conflict

- Bibshort, hygiène, pubic hair

Saddle Conflict

- Bibshort, hygiène, pubic hair
- Poor bike setting (saddle height, setback, tilt, drop)



Saddle Conflict

- Bibshort, hygiène, pubic hair
- Poor bike setting (saddle height, setback, tilt, drop)
- Pelvis instability caused by lower limb length inequality (LLLI)



Saddle Conflict

- Bibshort, hygiène, pubic hair
- Poor bike setting (saddle height, setback, tilt, drop)
- Pelvis instability with clinical explanations
- Pelvis instability caused by « Epine irritative »



Pelvis instability caused by LLLI

Bouillod et al. (2017)

- Orthotics insoles + LLLI compensation
- Trend to ↗ Gross Efficiency

Bouillod et al. (2020)

- Orthotics insoles + LLLI compensation on TT position
- Pelvis movements ↘
- Acd =
- Comfort perception ↗

Pelvis instability caused by « épine irritative »

“L'épine irritative d'appui plantaire” → Concept from posturology

Irritative Plantar Support Spines are defined as follows:

"these are conscious or unconscious nociceptive zones in the foot which, when they come into contact with the environment, cause a change in posture or balance in standing people."

Vulvar Lymphoedema, THE technopathology of the women cyclists



- Swelling caused by the slowing or blocking of lymph circulation
- Histology close to the 3rd testicle pathology
- often accompanied by chronic epidermitis, boils and focullitis

No medical treatment

Medical recommendations :

Once installed, the aim is to limit its development by taking preventive measures :

- Bikefitting
- Hygiène
- Bibshort good shape & quality
- Trimming from 2 to 3cm height
- Cryo



Surgical Treatment



Survey on vulvar lymphoedema among female members of the French Cycling Federation

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¹ Centre Hospitalier des Pays de Morlaix, ² Fédération Française de Cyclisme

MAIN GOAL: To determine the **prevalence** of VL in female FFC licence holders.

SECONDARY GOAL: To determine **risk factors**.



FFC VL SURVEY

Muller M, Maillot J, Ménadier E. SFMES Vichy, 2020.

Prévalence : 30/141 = **21,3%** (60,9% **national ou international** level).

Consequencies :

57,1% Reduction in training.

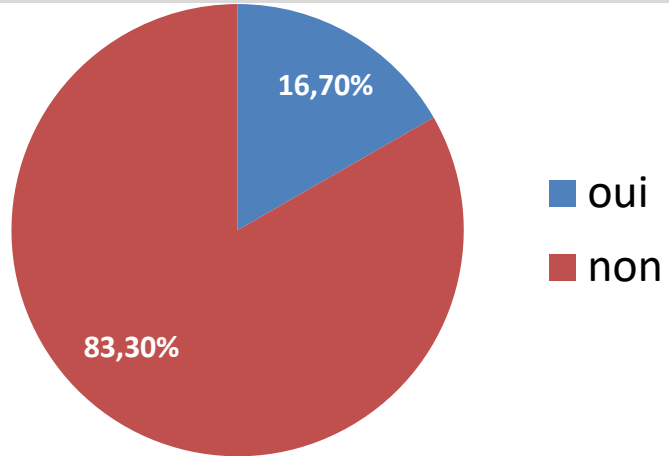
28,6% Temporary cessation of practice.

64,3% Change of position.

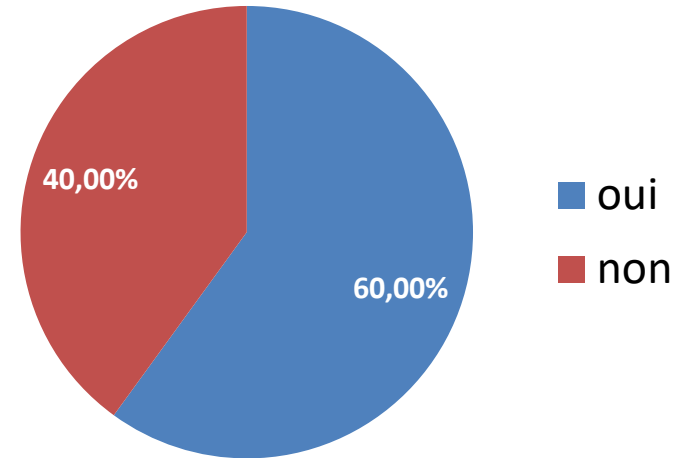


RESULTS

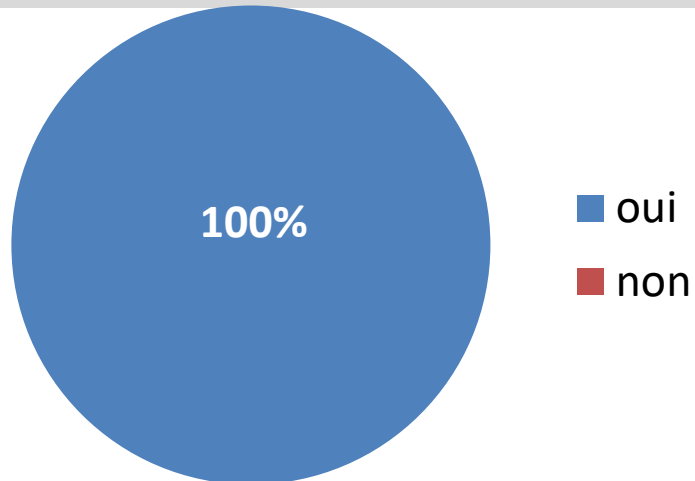
Have you been treated for vulvar lymphoedema?



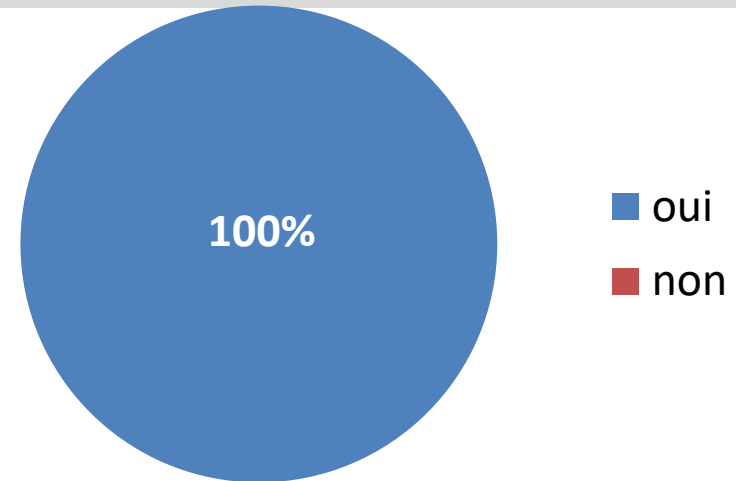
If so, have you had an operation?



Have you had any problems healing following surgery?

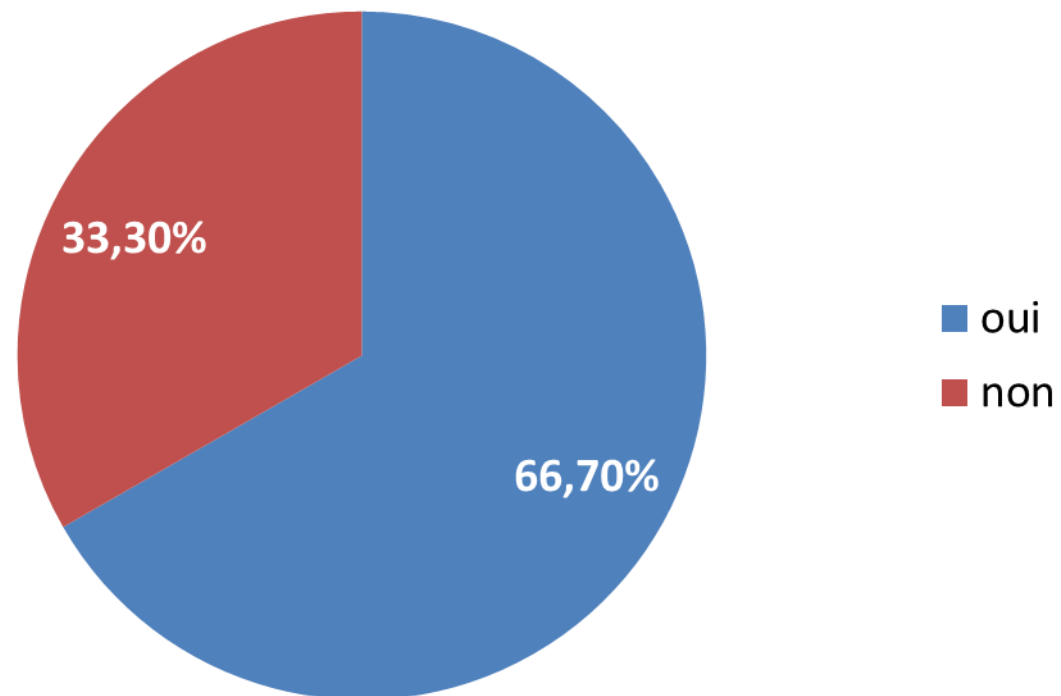


Do you have any after-effects (discomfort, pain) from the surgical treatment?



RESULTS

Did the vulvar lymphoedema **recur** after surgery?



The case study

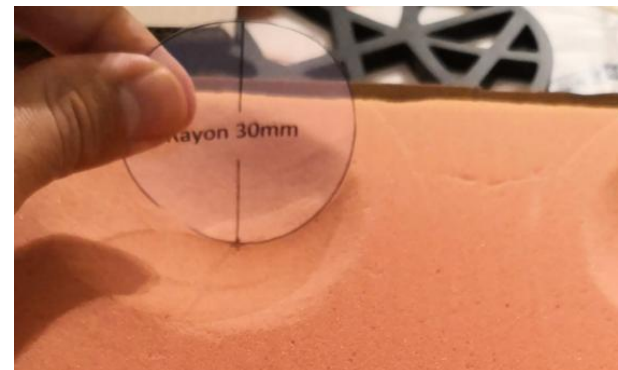
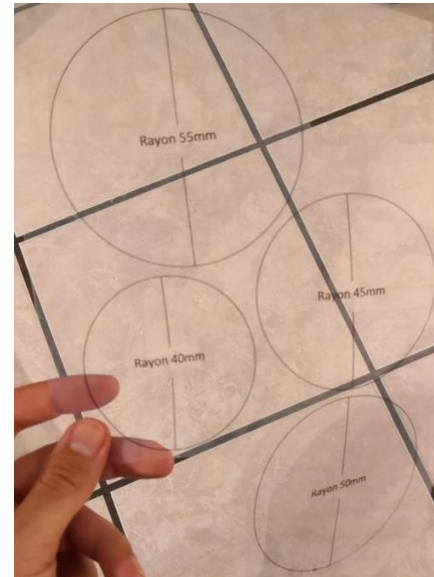
Subject

- 1 Rider in UCI Women Continental Team
- Unilateral vulvar lymphoedema
- Homolateral knee chondropathy
- Anterior & Homolateral saddle pain/injuries
- Uses LLLI compensation and orthotics insoles
- Has pelvis instability

We assume that


- Pelvis instability increase the risk of VL
- Inappropriate saddle can cause an irritative spine when sitting and cause pelvis instability.
- A custom made saddle would delete the irritative spine by increasing the bearing surface, and so :
 - ↘ pelvis movements
 - ↗ comfort perception
 - ↘ the related injuries.

Saddle Customization Process



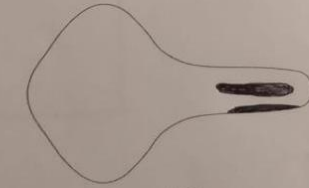
VOS INFORMATIONS ET PARAMETRES

Votre NOM : Yapora Plaza Votre PRENOM : Anabel Maria Ferronche
NOM ou SURNOM pour personnaliser votre selle (7 caractères max.) : E E R
HOMME FEMME Votre POIDS (Kg) : 55
Type VELO : COURSE VTT VILLE
Type PRATIQUE : COMPETITION CYCLO-SPORT LOISIR
POSITION sur la selle : Plutôt « classique » Plutôt sur l'avant (bec de selle)
SOUPLESSE du dos (entourez le schéma ci-dessous qui vous correspond)



Votre RESSENTI et/ou DOULEURS avec votre selle actuelle (localisez les zones concernées sur schéma ci-dessous si besoin) :

*Je sens la selle très dure même si elle est avec du gel.
J'ai mal sur l'avant de la selle, au guidon.
Je sens ma hanche gauche plus sensible et je m'assois donc plus sur le côté droit et sur la hanche droite gauche et régulièrement blessée.*



Vos ISCHIONS : ECARTEMENT (mm) : 130mm RAYON MOYEN (mm) :

www.selle-velo-sur-mesure.sitew.fr/ / contact : selle.velo.sur.mesure@gmail.com

Saddle Characteristics

- The width is determined by the distance between the ischials
- The ischial section is hollowed out according to the ischial radius
- The ischial area is 10mm higher than the pubic area
- The shell is flexible due to the tensed shell concept
- The foam is 4mm Polyuréthane high density



Methodology

Testing Protocol

- Kinematics, Kinetics, saddle pressure and comfort perceptions were measured while riding at 70-75% of estimated MAP and with 2 different cadences : 90-95rpm (power) and 70-75rpm (strength)

Kinematics



Methodology

Testing Protocol

- Kinematics, Kinetics, saddle pressure and comfort perceptions were measured while riding at 70-75% of estimated MAP and with 2 different cadences : 90-95rpm (power) and 70-75rpm (strength)

Kinetics



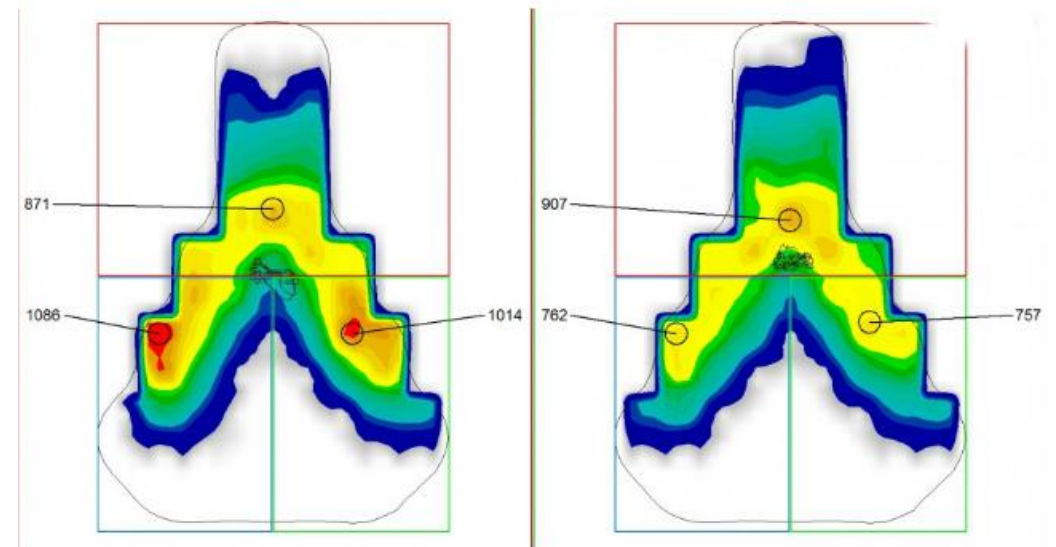
Methodology

Testing Protocol

- Kinematics, Kinetics, saddle pressure and comfort perceptions were measured while riding at 70-75% of estimated MAP and with 2 different cadences : 90-95rpm (power) and 70-75rpm (strength)

Saddle Pressure

gebioMized

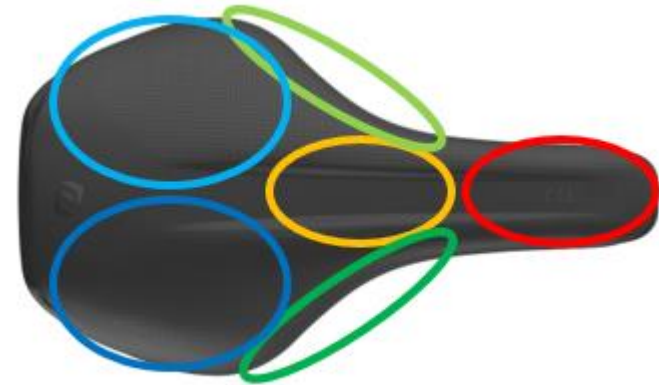


Methodology

Testing Protocol

- Kinematics, Kinetics, saddle pressure and comfort perceptions for overall and divided areas, were measured while riding at 70-75% of estimated MAP and with 2 different cadences : 90-95rpm (power) and 70-75rpm (strength)

Comfort Perception

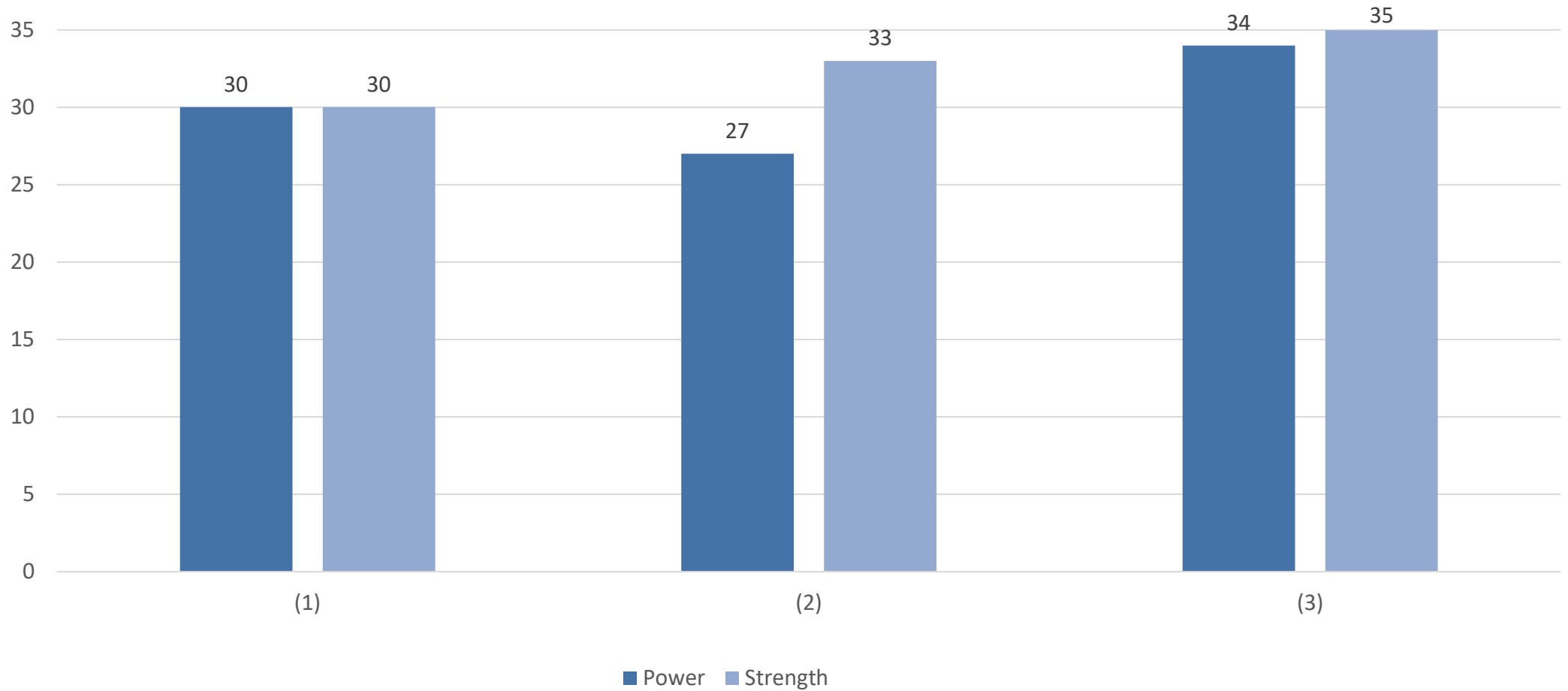


Testing Protocol

Datas were recorded for 3 different saddles :

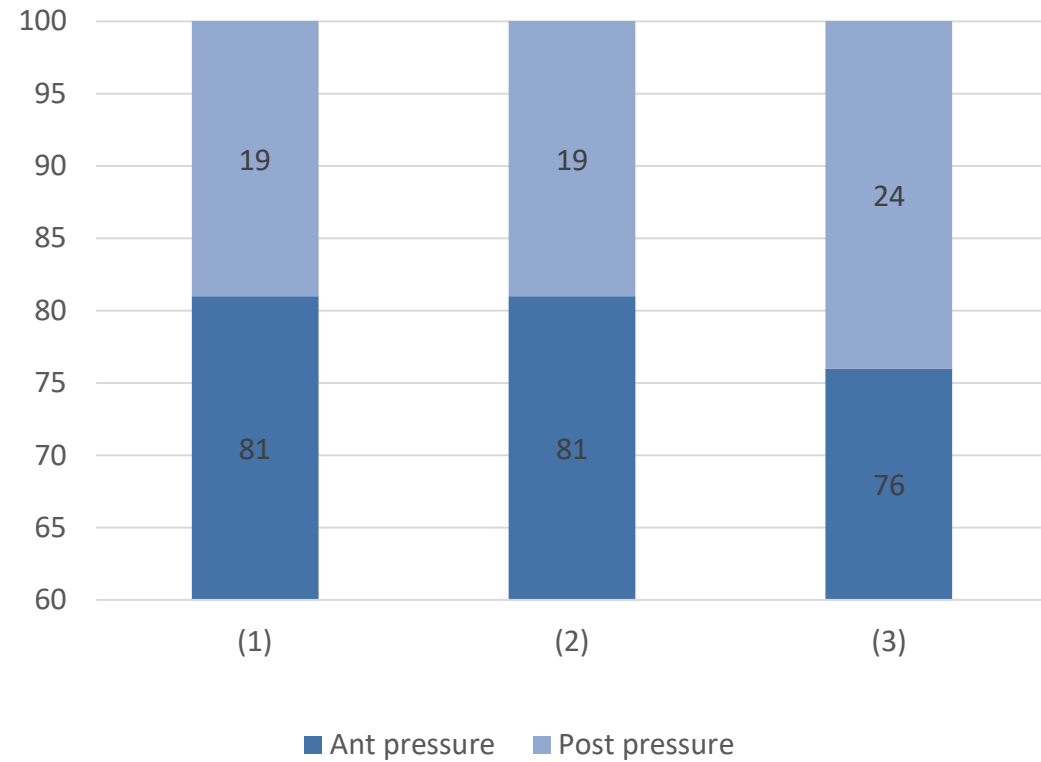
- (1) the original saddle
- (2) the customized saddle without foam
- (3) the customized saddle with foam

Percentage of the bearing surface on the saddle total surface

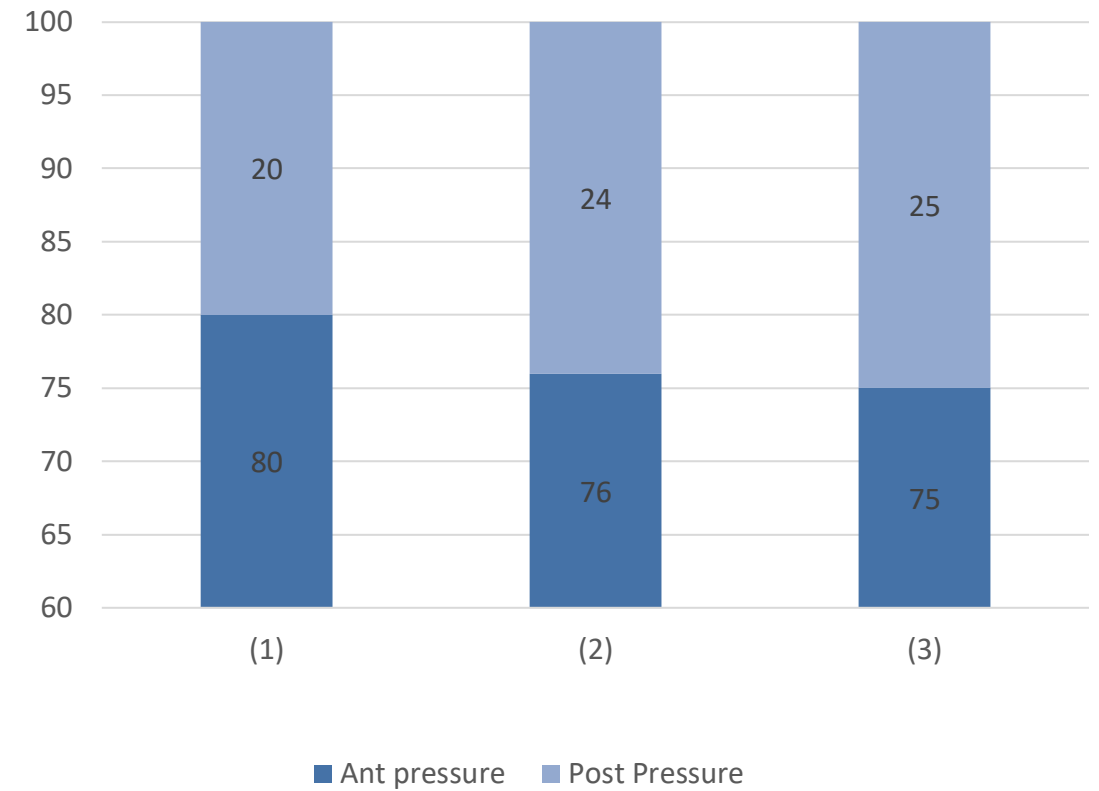


Anteroposterior répartition of the pressure on the saddle

Power

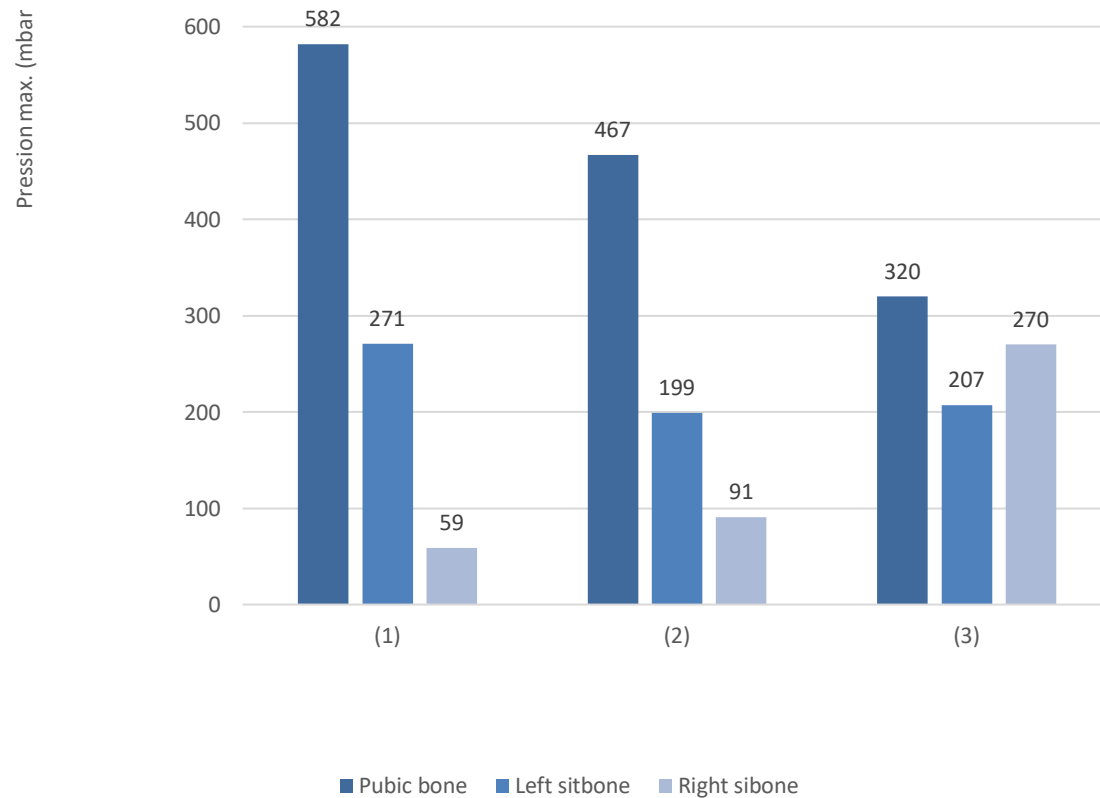


Strength

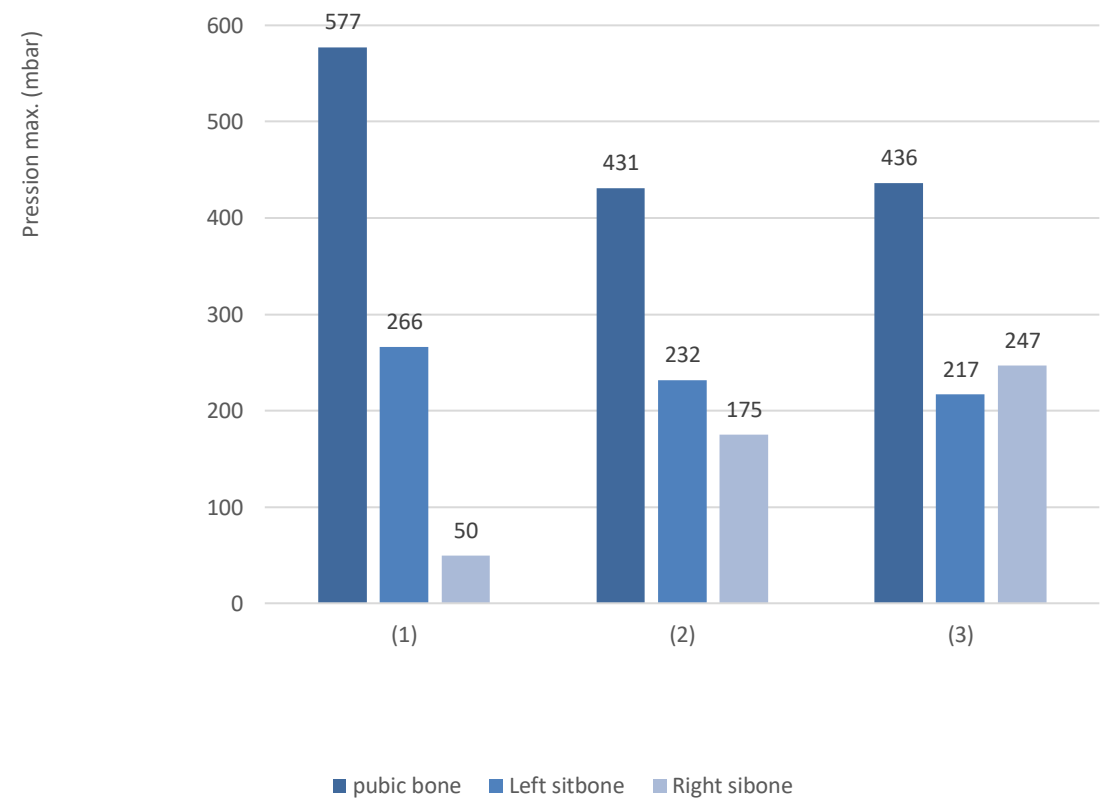


Maximal pressures applied on the saddle

Power

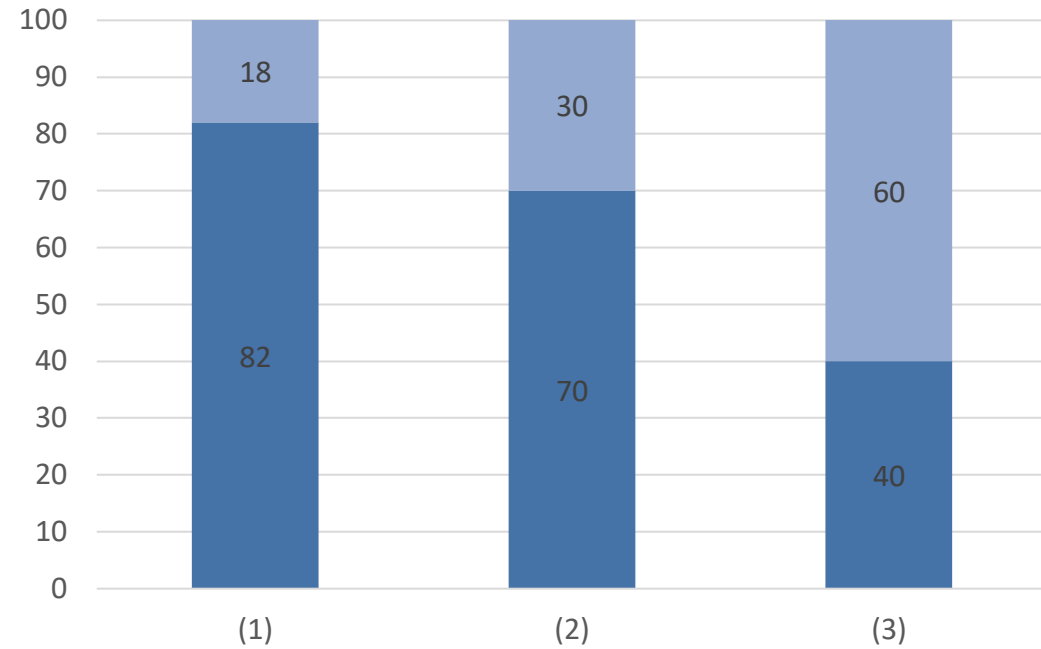


Strength



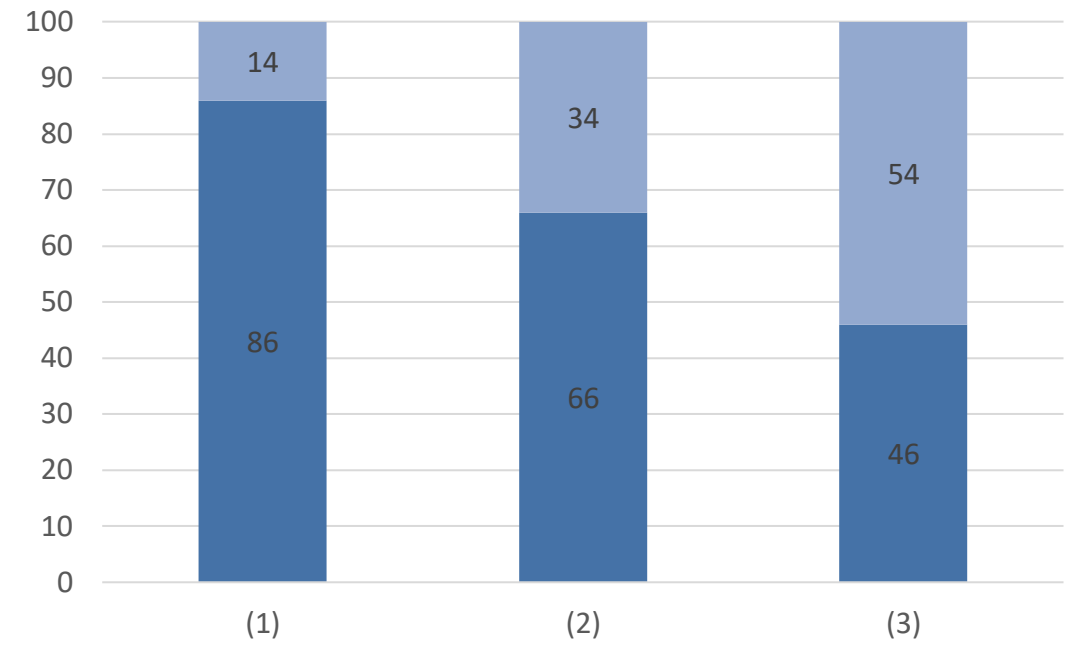
Lateral repartition of the pressure on the saddle

Power



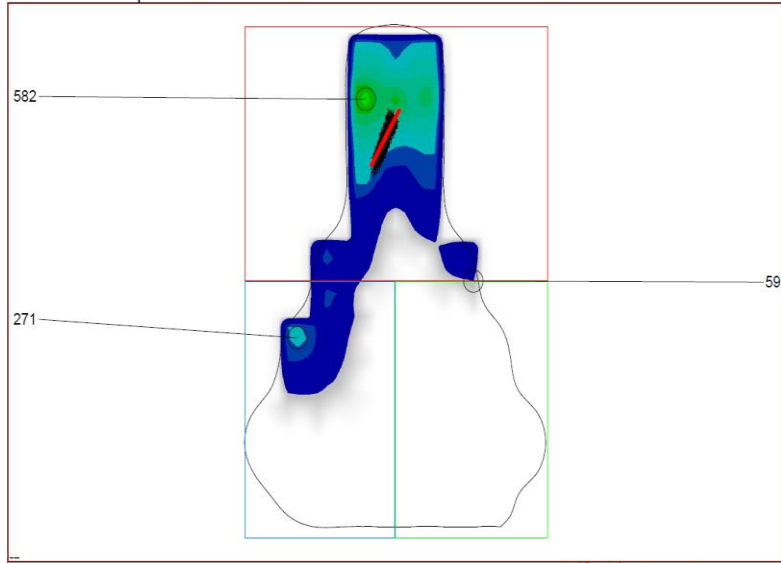
■ Left sitbone pressure ■ Right sitbone pressure

Strength

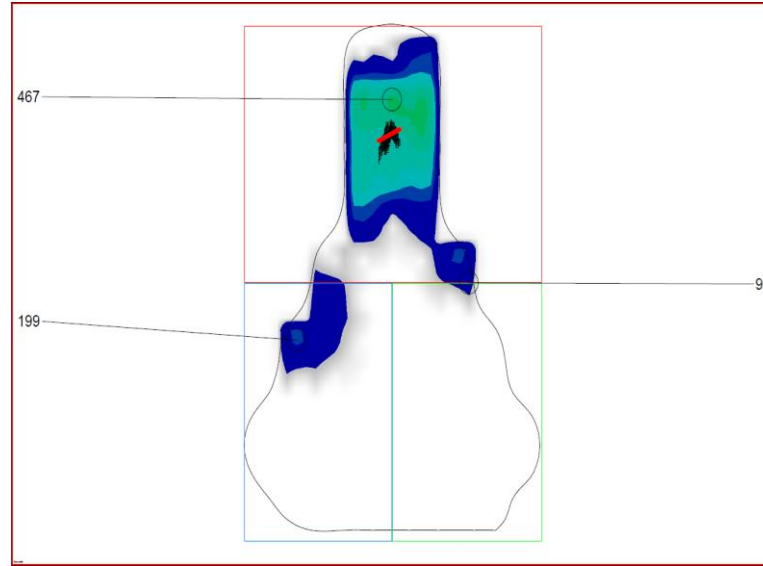


■ Left sitbone pressure ■ Right sitbone pressure

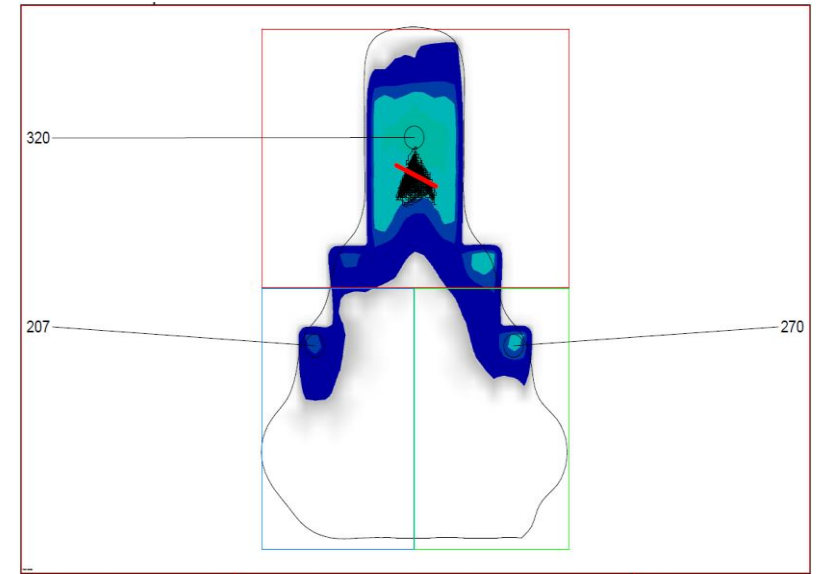
Power



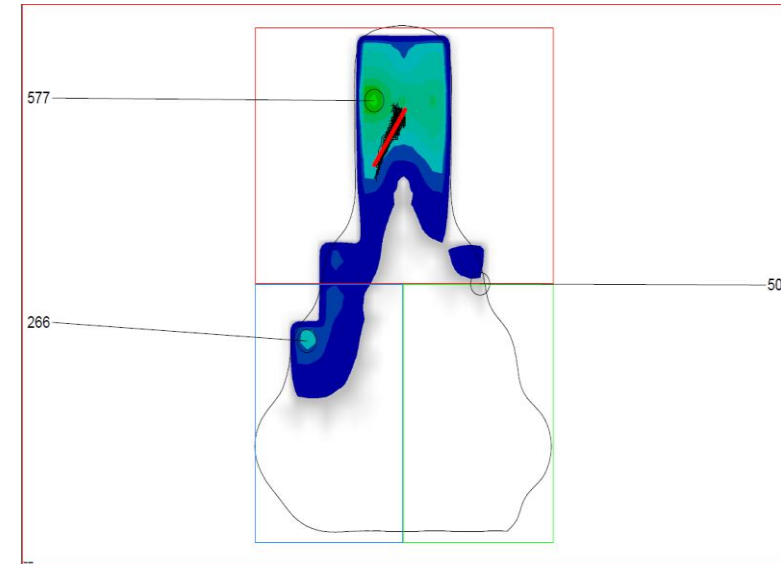
Saddle (1)



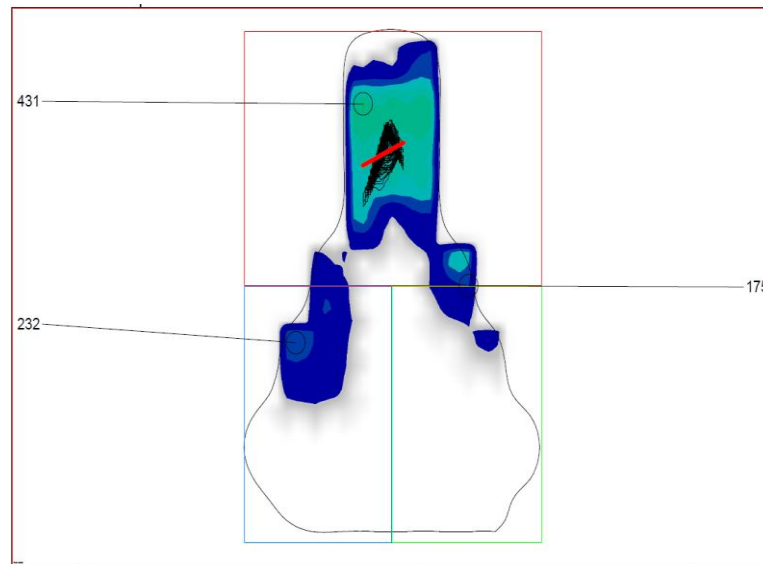
Saddle (2)



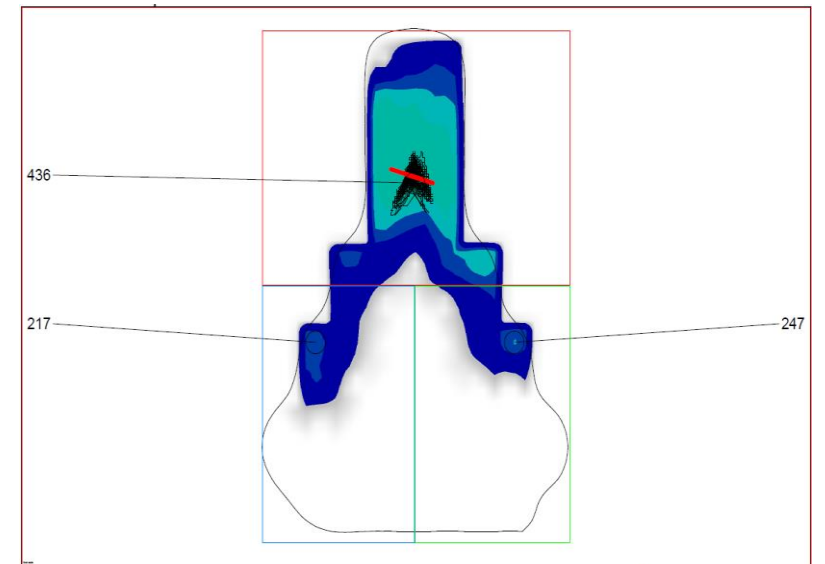
Saddle (3)



Saddle (1)



Saddle (2)

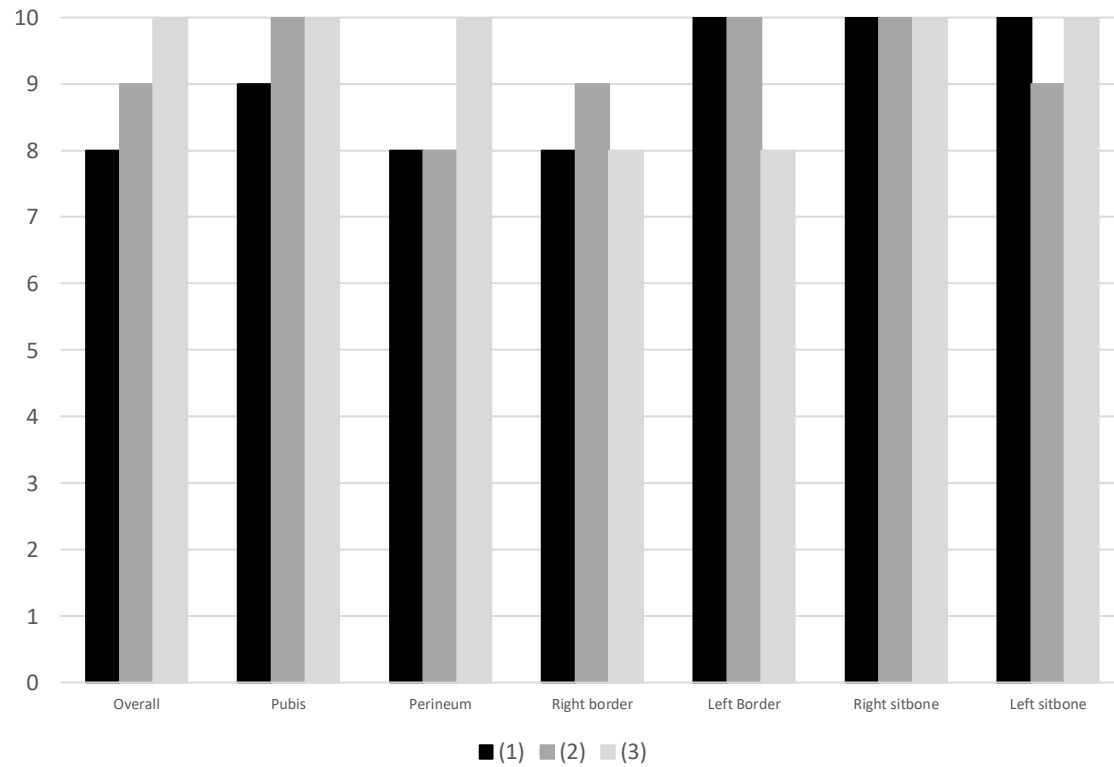


Saddle (3)

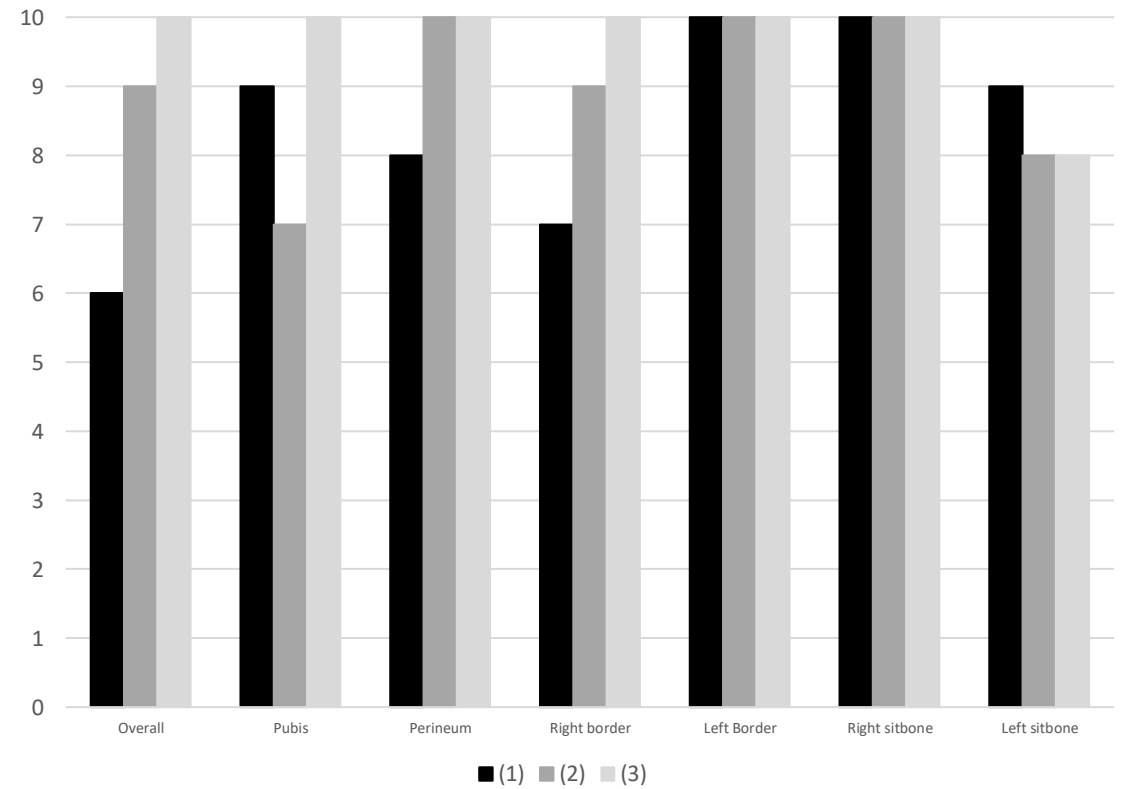
Strength

Perception of the saddle comfort

Power



Strength



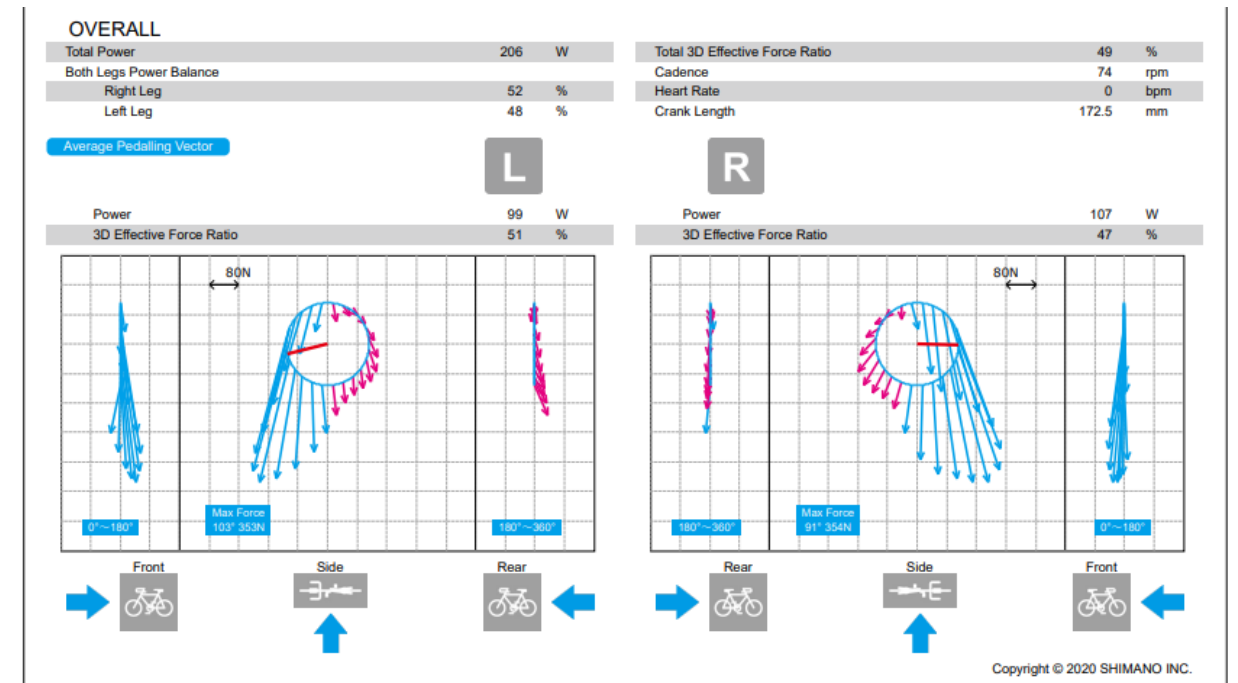
Medical investigations



- Testimony from the subject of a reduction in the volume of the VL and of the localised injuries
- Objective measurements ?

Performance investigations

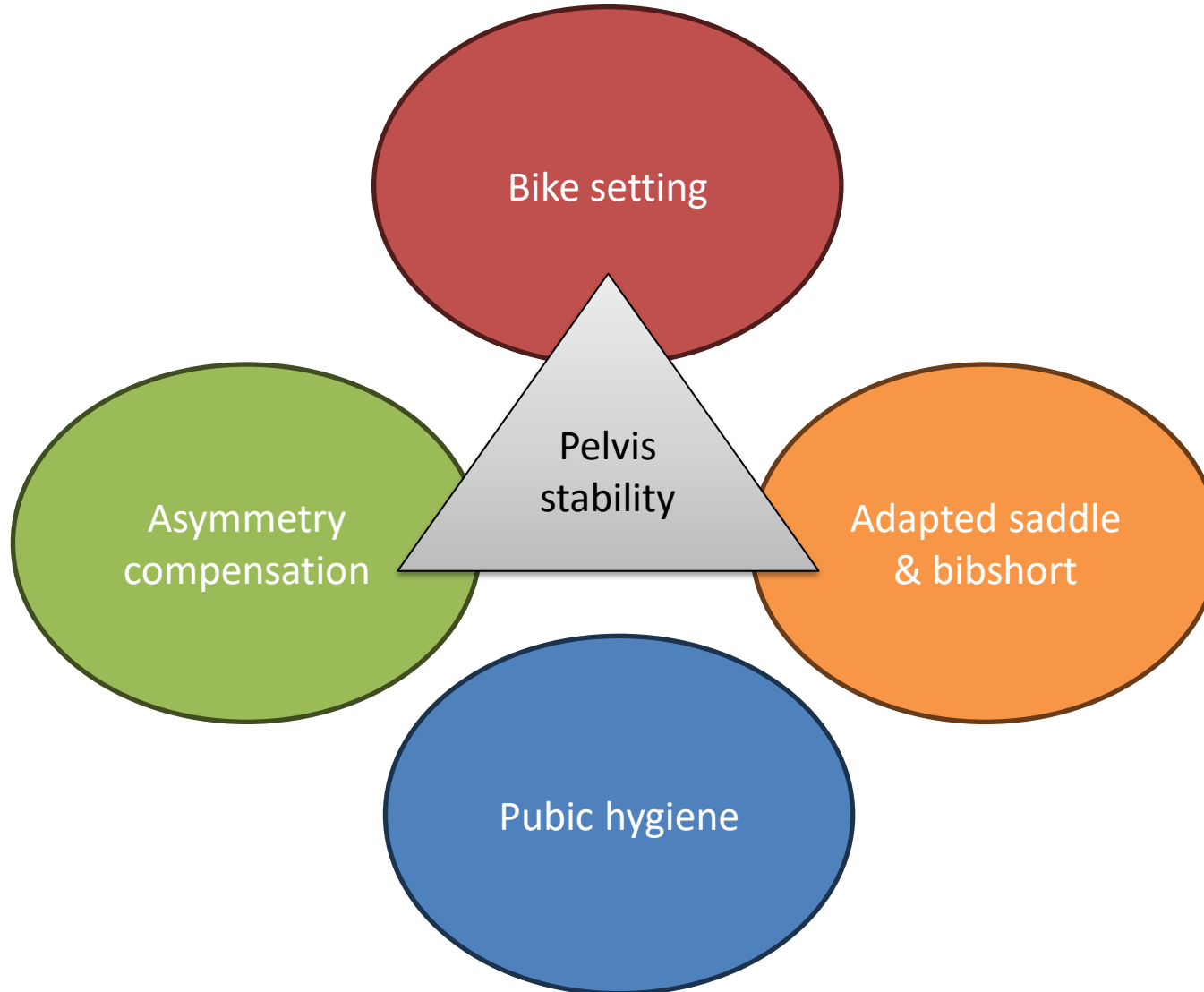
- ↘ pelvis movement
- = ↗ pedalling effectiveness ?



A combination of techniques

- Impression for ↗ the bearing surface and the posterior support, yes. But not only.
 - Flexibility of the shell to relieve the anterior support
 - The width of the anterior part for the thigh passage and considering the VL
 - The foam to relieve the support, but how long does it last ?
- The study keeps going to measure the longevity of the saddle

To prevent the VL



Conclusion

- Complete management of the position may be necessary to relieve mechanical pathologies
- Saddle conflict is a central problematic in the women cyclist position
- More investigations on women materials are necessary