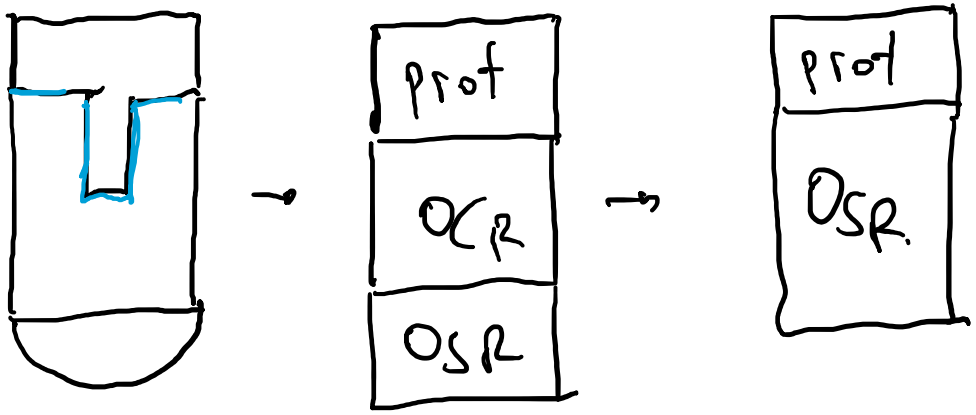


$$\begin{cases} E_z = \dfrac{E_p E_{osR}^z}{f_p E_{osR}^z + f_{osR} E_p} \\ E_{xy} = f_p E_{pt} + f_{osR} E_{osR}^{xy} \\ f_p + f_{osR} = 1 \end{cases}$$

2pt ib → dato dalla radiografia paziente

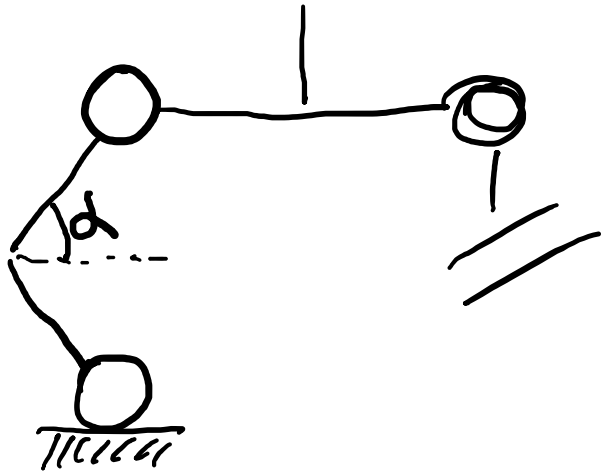
Spt ib

hp

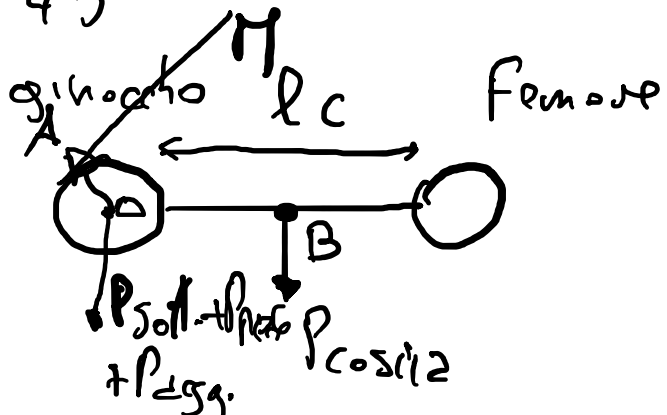
2p

$$G_z = G_{xy}$$

$$\frac{R_z}{\pi R^2 \cancel{p}t} = \frac{R_{xy}}{2\pi R_p h_p}$$



$\alpha = 45°$



$$M \cdot OA = P_{coscia} \cdot OB = P_{coscia} \frac{lc}{2}$$

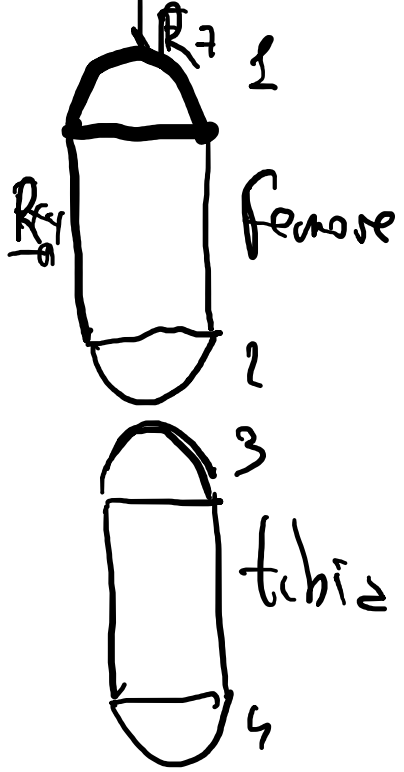
$$M = P_{coscia} \frac{lc}{2OA}$$

$$R_z = -P_{coscia} - P_{soll.\ coscia} - P_{piede} - P_{gamba} - M \sin\alpha$$

$$R_{xy} = -M \cos\alpha$$

$P_{gamba} = 100\,N$

$P'_{gamba} = 150\,N$

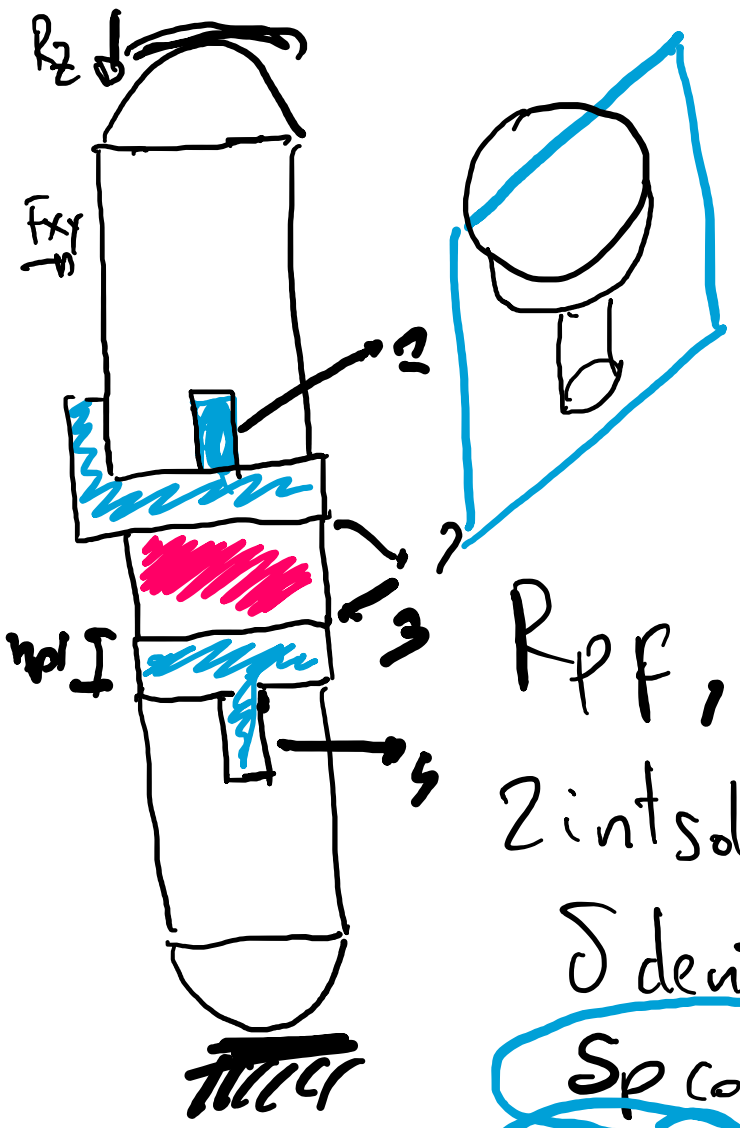


$$\varepsilon_z = \frac{R_z}{2\pi R_1^2} \cdot \frac{1}{E_{osp}} + \frac{R_z}{\pi R_{2dist1}^2} \cdot \frac{1}{E_{odist1}^z} + \frac{R_z}{\pi R_2^2} \cdot \frac{1}{E_{osp}} +$$

$$+ \frac{R_z}{2\pi R_3^2} \frac{1}{E_{osp}} + \frac{R_z}{\pi R_{2dist1}^2} \cdot \frac{1}{E_o^z dist_2} + \frac{R_z}{\pi R_4^2} \frac{1}{E_{osp}}$$

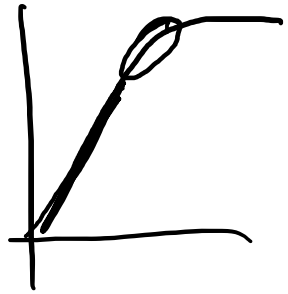
$$\varepsilon_{xy} = \frac{R_{xy}}{\frac{2}{3}\pi \frac{R_1^3}{hep_1}} \frac{1}{E_{osp}} + \frac{R_{xy}}{2\pi R_f h_f} \cdot \frac{1}{E_o^{xy} dist_1} + \frac{R_{xy}}{\frac{2}{3}\pi \frac{R_2^3}{hep_1}} \cdot \frac{1}{E_{osp}} +$$

$$+ \frac{R_{xy}}{\frac{2}{3}\pi \frac{R_3^3}{hep_3}} \cdot \frac{1}{E_{osp}} + \frac{R_{xy}}{2\pi R_f h_f} \cdot \frac{1}{E_o^{xy} dist_1} + \frac{R_{xy}}{\frac{2}{3}\pi \frac{R_4^3}{hep_4}} \frac{1}{E_{osp}}$$



$$R'_z = \frac{R_z}{2} \qquad R'_{xy} = \frac{R_{xy}}{2}$$

$$\sigma_{xy} = \frac{R_{xy}}{A/7}$$



Rpf, hpf

2 intsolc, 2estsolco

δ deuto f

Specofile, 2cofile

2pt, hpt

2peraot, hptchak

2 def

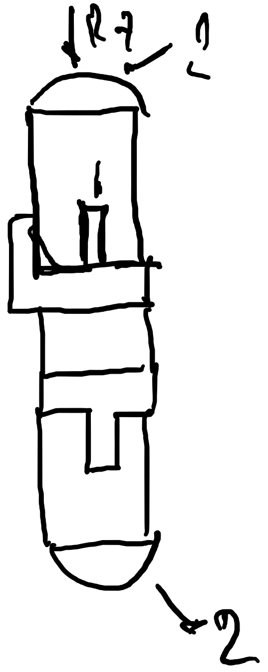
4 risostress

2 momenti torsionali

1 momento di bending

$0.5 < S_p < 1\ cm$

$R_{cot} = R_{tibia} = R_{piabbiale}$



$$\varepsilon_z = \frac{R'_z}{\frac{\cancel{2}\pi R_1^2}{\cancel{2}}} \cdot \frac{1}{E_{osRES}} + \frac{R'_z}{\frac{\pi}{2} R_{d1}^2} \cdot \frac{1}{E^z_{ocRES}} + \frac{R'_z}{\pi R_{int}\, \delta_{cemento}} \cdot \frac{1}{E_p}$$

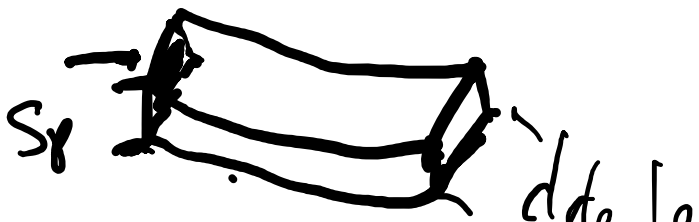
$$+ \frac{R'_z}{\frac{\pi}{2} R_t^2} \cdot \frac{1}{E_{cot}} + \frac{R'_z}{\frac{\pi}{2} R_f^2} \cdot \frac{1}{E_p} + \frac{R'_z}{\frac{\pi}{2}\left(R_t^2 - R_p^2\right)} \cdot \frac{1}{E^z_{ocR}} +$$

$$+ \frac{R'_z}{\frac{\pi}{2} R_2^2} \cdot \frac{1}{E_{osR}}$$

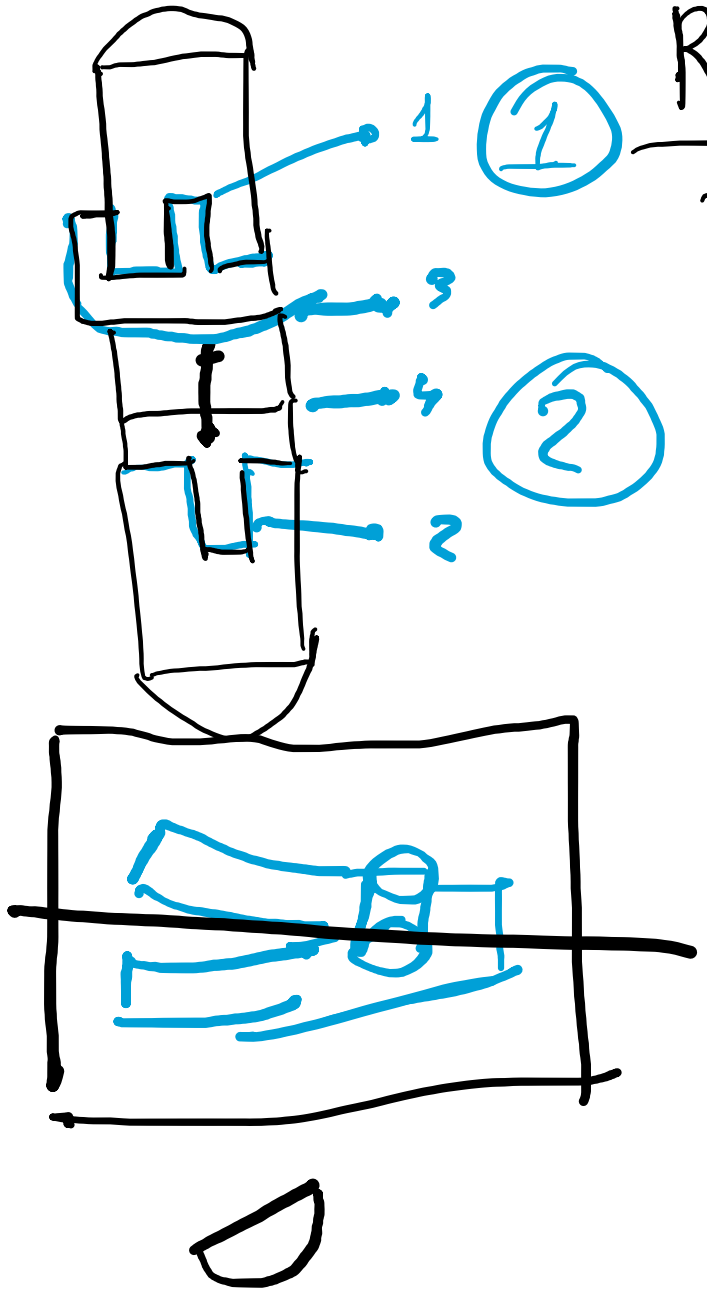
$$\varepsilon_{xy} = \frac{R'_{xy}}{\frac{1}{3}\pi R_1^3 \frac{1}{hep_3}} \cdot \frac{1}{\varepsilon_{osR}} + \frac{R'_{xy}}{\pi R_f h_f} \cdot \frac{1}{\varepsilon_{ocR}^{xy}} + \frac{R'_{xy}}{\pi R_{p1} h_{p1}} \cdot \frac{1}{\varepsilon_p} +$$

$$+ \frac{R'_{xy}}{\delta_{dente}(R_{est\,dente} - R_{int\,dente})} \cdot \frac{1}{\varepsilon_p} + \frac{R'_{xy}}{\pi R_t \delta_{col}} \cdot \frac{1}{\varepsilon_{col}} +$$

$$\frac{R'_{xy}}{\pi R_{tib} \delta_{post.t}} \cdot \frac{1}{\varepsilon_p} + \frac{R'_{xy}}{\pi R_{tb} h_{tb}} \cdot \frac{1}{\varepsilon_{con}^{xy}} + \frac{R'_{xy}}{\pi R_{tb} h_{pt}} \cdot \frac{1}{\varepsilon_p}$$



$$+ \frac{R'_{xy}}{\frac{1}{3}\pi R_4^3 \frac{1}{hep_4}} \cdot \frac{1}{\varepsilon_{osR}}$$



Isostress

$$\textcircled{1}\quad \frac{R'_z}{\pi R_{ext\,dente} \cdot \delta_{dente}} = \frac{R'_{xy}}{\pi n_{php} + \delta_{dente}(\rho_{est} - n_{ext})}$$

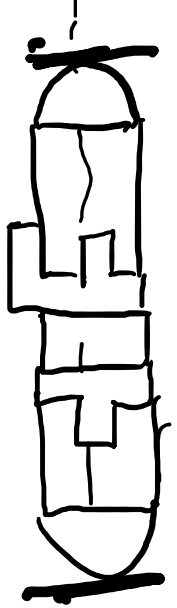
$$\textcircled{2}\quad \frac{R'_z}{\frac{\pi R^2_{tubo}}{2}} = \frac{R'_{xy}}{\pi n_{php}}$$

$$\textcircled{3}\quad \frac{R'_z}{\pi R_{est\,dente} \cdot \delta_{dente}} = \frac{R'_{xy}}{\delta_{dente}(R_{est} - n_{ext})}$$

Moment for Shaft:

$$\sigma_T^F = \frac{\Pi_T \cdot 2p}{J} = \frac{R_{xy} \cdot 2p \cdot 2p}{\frac{\Pi}{2}(R_f^4 - 2p^4)}$$

$$\sigma_T^{Jib} = \frac{\Pi_T \cdot 2\,t_{jib_2}}{J} = \frac{R_{xy}\, 2t_{jib_2} \cdot 2t_{jib_2}}{\frac{\Pi}{2}(R_{t_{jib_2}}^4 - 2p_{t_{jib_2}}^4)}$$



$$\sigma_b = \frac{M_b \cdot z}{I}$$

Momento f. bending

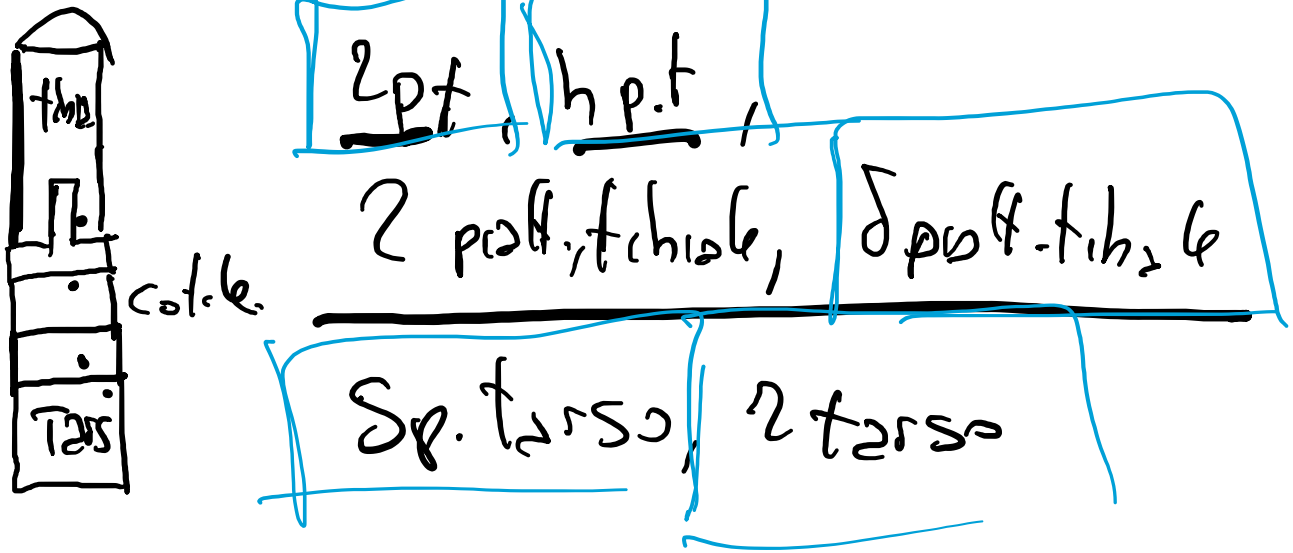
$$M_b = M_z \cdot 2\ell.$$

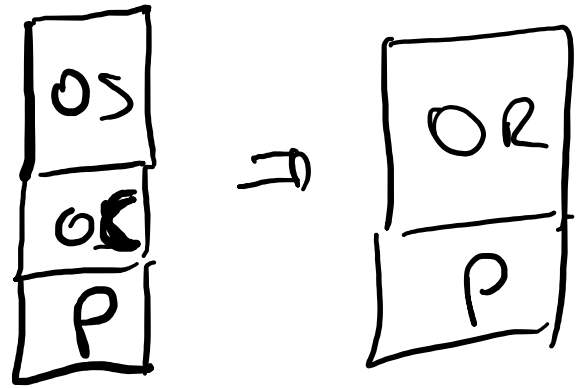
$$R_z = -P_{TOTALI} - M \sin\alpha.$$

$$\overline{M_z}$$

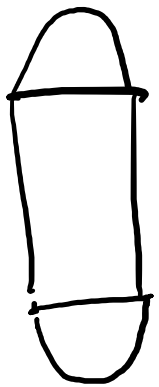
$2R, 2t$

$$\sigma_b = \frac{\overline{M_z} \cdot 2\ell \cdot 2l}{\frac{\pi}{4}\left(R^4 - 2^4_{PR}\right)}$$





$$2_{prox.tibiak} = 2_{tibia}$$



$$E_z = \frac{E_{OS} \cdot E_{OC}^z}{0.2 \cdot E_{OC}^z + 0.8 E_{OS}}$$

$$E_{xy} = 0.2 E_{OS} + 0.8 E_{OC}^{-xy}$$

$$E_z = \frac{E_{OR}^z \cdot E_P}{f_P E_{OR}^z + f_{OR} E_P}$$

$$E_{xy} = f_P E_P + f_{OR} E_{OR}^{-x_1}$$

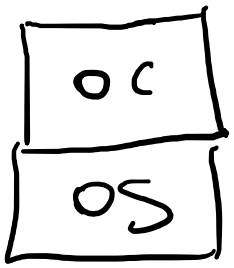
$$f_P + f_{OR} = 1$$

Isostress

SAMO

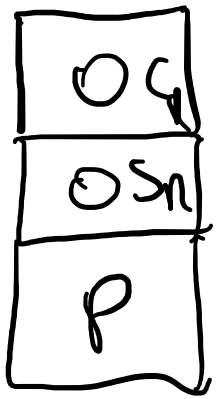
2% $f_{OS} < 5\%$.

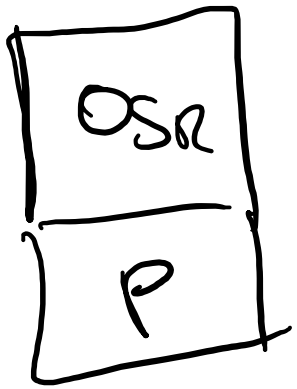
98% $f_{OC} < 95\%$.



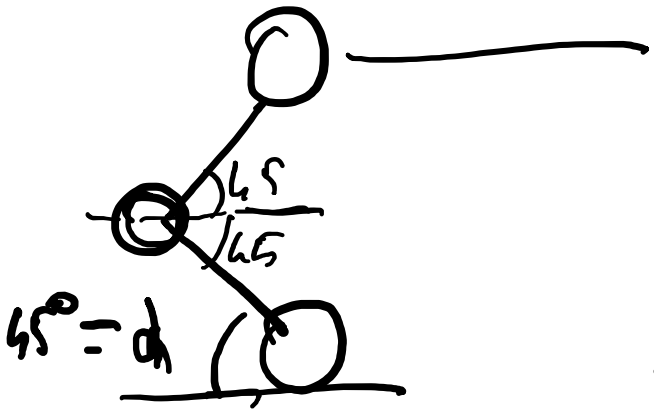
E_z^T

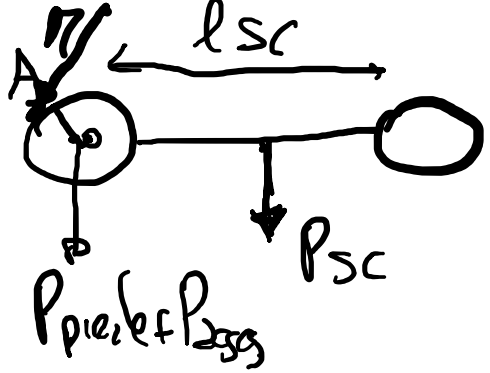
E_{xy}^T





$$\begin{cases} E_z = \dfrac{E_{OSR_{ES}}^{t} E_P}{f_P E_{OSR_{ES}}^{z} + f_{OSR_{ES}} E_P} \\ E_{xy} = f_P E_P + f_{OSR_{ES}} E_{OSR_{ES}}^{x_y} \\ f_P + f_{OSR_{ES}} = 1 \end{cases}$$





$m_{zg} = 5\,kg$

$m_{sg} = 1\,kg$

$P_{zgg} = 50\,N$

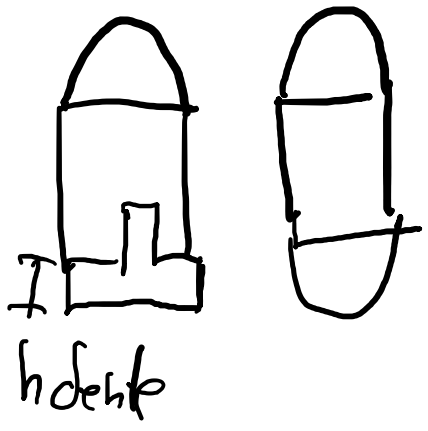
$P_{sgg} = 10\,N$

$$\Pi \cdot OA = P_{sc} \cdot \frac{l_{sc}}{2}$$

$$\Pi = P_{sc} \cdot \frac{l_{sc}}{2OA}$$

$$R_z = -P_{sc} - P_{przek} - P_{zgg} - \Pi \sin\alpha$$

$$R_x = -\Pi \cos\alpha$$



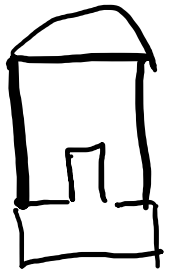
senza

$$\varepsilon_z = \frac{R_z}{2\pi R^2_{ep1}} \cdot \frac{1}{E_{OS}} + \frac{R_z}{\pi R^2_t} \cdot \frac{1}{E^z_{OC}} + \frac{R_z}{\pi R^2_{ep2}} \cdot \frac{1}{E_{OS}}$$

$$\varepsilon_{xy} = \frac{R_{xy}}{\frac{2}{3}\pi R^3_{ep1}} \cdot \frac{1}{E_{OS}} + \frac{R_{xy}}{2\pi R t h t} \cdot \frac{1}{E^{xy}_{OC}} + \frac{R_{xy}}{\frac{2}{3}\pi R^3_{ep1}} \cdot \frac{1}{E_{OS}}$$

$$\varepsilon_z = \frac{R_z}{2\pi R^2_{ep1}} \cdot \frac{1}{E_{OS_{RES}}} + \frac{R_z}{\pi R^2_{t,b}} \cdot \frac{1}{E^z_{OC_{RES}}} + \frac{R_z}{\pi R^2_{tib}} \cdot \frac{1}{E_P}$$

$$\varepsilon_{xy} = \frac{R_{xy}}{\frac{2}{3}\pi R^3_{ep1}} \cdot \frac{1}{E_{OS_{RES}}} + \frac{R_{xy}}{2\pi R t h t} \cdot \frac{1}{E^{xy}_{OC_{RES}}} + \frac{R_{xy}}{2\pi R_p h_p} \frac{1}{E_P} + \frac{R_{xy}}{2\pi 2t \cdot h_{dent}} \cdot \frac{1}{E_P}$$



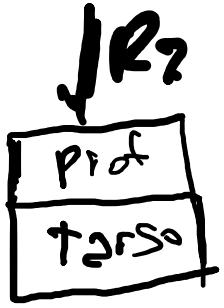
$$\frac{R_z}{\pi R^2 t} = \frac{R_{xy}}{2\pi R_p \cdot h_p}$$

$$\varepsilon_z = \frac{R_z}{2\pi R^2_{Tarso}} \quad Sano$$

$$\varepsilon_{xy} = \frac{R_{xy}}{2\pi R^2_{Tarso}}$$

$0.5 < \delta_{cor} < 1 \text{ cm}$

$$2_{cor} = 2t_{cibi}$$



$R_{int\ tarso}$
$R_{est\ tarso}$

$$\varepsilon_z = \frac{R_z}{2\pi R^2_{est\ tarso}} \cdot \frac{1}{\varepsilon_p} + \frac{R_z}{2\pi R^2_{int\ tarso}} \cdot \frac{1}{\varepsilon^z_{cor}}$$

$$\varepsilon_{xy} = \frac{R_{xy}}{2\pi R^2_{est\ tarso}} \cdot \frac{1}{\varepsilon_p} + \frac{R_{x-1}}{2\pi R^2_{int\ tarso}} \cdot \frac{1}{\varepsilon^{xy}_{cor}}$$

2 deformazioni

2 isostress

1 momento torsionale