P013 Muscular angiogenic factors and capillary growth – effect of 4 weeks of continuous training.
Birgitte Hoier, Nikolai Nordsborg, Søren A. Andersen, Jens Bangsbo and Ylva Hellsten
University of Copenhagen, Copenhagen O, Denmark

PURPOSE: To examine the effect of a period of moderate continuous exercise training on angiogenic factors and capillarization in skeletal muscle.

METHODS: Fourteen young males performed 60 min of continuous cycling at 62% of VO$_2$ max 3 times/wk for 4 wks. Muscle biopsies were obtained from m. v. lateralis before and after 4 wks of training. Muscle interstitial fluid was collected during acute continuous cycling at week 0 and 4.

RESULTS: A bout of exercise induced an increase in interstitial VEGF (141 ± 34 to 935 ± 200 pg/ml) that was no affected by 4 wks of training. Four wks of training enhanced the capillary to fiber ratio (2.45 ± 0.10 to 3.03 ± 0.16 cap fiber$^{-2}$), no. of capillaries around each fiber (4.25 ± 0.17 to 5.09 ± 0.22), and capillary density (511 ± 19 to 571 ± 24 cap mm$^{-2}$). A bout of continuous exercise at wk 0 induced an increase in the mRNA level of VEGF 2.5-fold, of Ang2 2.4-fold, of Ang2/Ang1 ratio 2.7-fold (P <0.001), and of THBS1 3.3-fold. After 4 wks of training, exercise induced an increase in the mRNA level of MMP9 5-fold, Ang2/Ang1 ratio 2.3-fold, and THBS1 3.1-fold.

CONCLUSION: The results demonstrate that the interstitial VEGF levels in response to exercise are independent of training status. A period of continuous training leads to capillary growth and has an effect on multiple angiogenic factors.