

## **Effects of cyclist specificity on the selection of the preferred pedalling cadence in seated and standing position.**

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*Purpose* - Competitive cyclists use generally a lower preferred pedalling cadence (PPC) in uphill than in flat race (1). This reduction could be due to i) the decrease of the power output, ii) the increase of the road slope, iii) the limited gear ratio and iiiii) the frequent switch of body position (2). The specificity of cyclists can also affect the selection of the PPC. At our knowledge, none study had compared the PPC between flat terrain specialists and climbers.

*Methods* – Eight trained cyclists classified as flat terrain specialists (n = 4) or climbers (n = 4) performed two pedalling trials of three minutes at 80% of maximal aerobic power on a motorised treadmill with a slope of 4%. Two positions (seated and standing pedalling) were studied in a randomized order. During the first minute of each trial, the subjects had to choose their PPP with adjusting their gear ratio and then kept this rate until the end. Throughout the tests, the pedalling cadence and the power output were measured and controlled with a Powertap hub. The statistical analysis was performed with using the Mann-Whitney Rank Sum test.

*Results* – This preliminary study showed that climbers choose a higher PPC in standing position ( $78 \pm 6$  rpm) than the flat terrain specialists ( $68 \pm 3$  rpm). The PPC in seated position is not significantly different between the two groups:  $81 \pm 7$  vs  $76 \pm 5$  rpm, respectively.

*Conclusion* – We suppose that flat terrain specialists choose a lower PPC during standing pedalling in order to generate greater peak pedal force and to decrease the number of vertical elevations of pelvis, which increase energy cost (due to their higher weight). These results must to be confirmed with increasing the sample size of the two groups.

*Key words:* uphill cycling – climbers – flat terrain specialists – cadence

### References

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