

[J Appl Physiol](#). 2007 Nov;103(5):1752-6. Epub 2007 Sep 6.

**Recruitment of single muscle fibers during submaximal cycling exercise.**

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In literature, an inconsistency exists in the submaximal exercise intensity at which type II fibers are activated. In the present study, the recruitment of type I and II fibers was investigated from the very beginning and throughout a 45-min cycle exercise at 75% of the maximal oxygen uptake, which corresponded to 38% of the maximal dynamic muscle force. Biopsies of the vastus lateralis muscle were taken from six subjects at rest and during the exercise, two at each time point. From the first biopsy single fibers were isolated and characterized as type I and II, and phosphocreatine-to-creatine (PCr/Cr) ratios and periodic acid-Schiff (PAS) stain intensities were measured. Cross sections were cut from the second biopsy, individual fibers were characterized as type I and II, and PAS stain intensities were measured. A decline in PCr/Cr ratio and in PAS stain intensity was used as indication of fiber recruitment. Within 1 min of exercise both type I and, although to a lesser extent, type II fibers were recruited. Furthermore, the PCr/Cr ratio revealed that the same proportion of fibers was recruited during the whole 45 min of exercise, indicating a rather constant recruitment. The PAS staining, however, proved inadequate to fully demonstrate fiber recruitment even after 45 min of exercise. We conclude that during cycling exercise a greater proportion of type II fibers is recruited than previously reported for isometric contractions, probably because of the dynamic character of the exercise. Furthermore, the PCr/Cr ratio method is more sensitive in determining fiber activation than the PAS stain intensity method.