1035-92-788 **AKONGNWI C MFORMBELE*** (amformbe@ggc.usg.edu), Georgia Gwinnett College, 1000 university center lane, lawrenceville, GA 30043. *THE ROLE OF TIME DEPENDENCE IN THE EXCHANGE OF OXYGEN AND SUBSTRATES IN A MULTI-CAPILLARY SYSTEM OF THE SKELETAL MUSCLE.*

The time dependent problem is analyzed to examine the extent to which interaction among the capillaries retards the development of anoxia in a poorly perfused region of the skeletal muscle by facilitating diffusion into this region from adjacent normally perfused regions. This phenomenon is examined by analyzing a mathematical model of time-dependent oxygen transport. Formulating the problem leads to a coupled system of nonlinear first order partial differential equations and algebraic equations. Analytic and numerical results are obtained in these situations. We find out that when perfusion of a region is suddenly decreased, oxygen depletion is significantly retarded by large scale diffusion of oxygen from richly perfused adjacent regions to the poorly perfused regions. (Received September 15, 2007)