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# Anatomical, Physiological and Hematological Effects of Training and Competition on Female Intercollegiate Basketball Players

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ANATOMICAL, PHYSIOLOGICAL, AND HEMATOLOGICAL EFFECTS OF TRAINING AND COMPETITION ON FEMALE INTERCOLLEGIATE BASKETBALL PLAYERS. P.S. Diehl\*, L.D. Morris\*, and E.L. Fox: The O.S.U., Columbus, Ohio.

Nine volunteers from the 1973-74 O.S.U. women's basketball team were tested pre-training (I), pre-competition (II), and post-competition (III), on the following parameters: body composition (ht., wt., skinfold measures): strength (dynamometer-grip; tensiometer-hip flexion, shoulder flexion, ankle plantar flexion); power (vertical jump); and submaximal and maximal work-effort response ( $\dot{V}O_2$ , HR,  $\dot{V}_E$ ,  $\dot{V}O_2/\dot{V}_E$ ,  $O_2$  pulse). Monthly hematological determinations involving a CBC, SeFe, TIBC, serum cholesterol, and serum triglycerides were made throughout the study for several subjects. Practices were held 5 da/wk, 2 hrs/da throughout the study (10/23-3/7); in addition the training period (10/23-12/12) included a weight training program 3 da/wk. There were 12 regular season and 8 post-season tournament games. Significant changes in body composition ( $P < .05$ ) reflecting a greater lean body mass to fat ratio were evidenced with no concomitant weight change. Hip flexion and shoulder flexion tensiometer tests indicated a significant ( $P < .05$ ) increase in strength during the pre-season training, which was maintained during the season. Actual vertical jump distances and derived power scores were significantly ( $P < .05$ ) greater in tests II and III than in test I, with no significant difference between tests II and III. A significant ( $P < .05$ ) improvement in cardiorespiratory response to a submaximal work effort as reflected by HR,  $\dot{V}O_2$  (ml/kg and l/min),  $\dot{V}_E$ , and  $\dot{V}O_2/\dot{V}_E$ , was evidenced between tests I and III. Maximal  $\dot{V}O_2$  (l/min and ml/kg) did not significantly change during the study period. Although the number of hematological determinations obtained did not warrant statistical analysis, no adverse trends in the parameters assessed were revealed during training and competition. (Supp. in part by O.S.U. College of Education)

MECHANISTIC BASIS FOR THROMBIN-INDUCED VASODILATION IN THE DOG. J. DiSalvo, C. Schmidt-Huff\*, G. Newman\*, and G. Grupp. Depts. of Physiol. & Med., Coll. of Med. Univ. of Cinn, OH. 45229.

Recently we found that indomethacin, a compound that inhibits platelet release reactions, significantly reduced hindlimb vasodilation by thrombin (T) in the dog. We suggested that increases in femoral blood flow (FBF) produced with T were partly due to interactions between T and circulating platelets. To explore this hypothesis further we compared the effects of T and T-like enzymes extracted from snake venoms on FBF in dogs anesthetized with pentobarbital. T, reptilase (R, Bothrops atrox), and venacil (V, Agkistrodon rhodostoma) all convert fibrinogen to fibrin, but only T and R appear to cause release of platelet contents. Bovine T and R (1-8 NIH units, ia) produced dose-dependent increases in FBF that were rapid in onset, attained maximal levels in about 15 sec, and occurred without changes in arterial pressure. Responses to ADP (25  $\mu$ g, ia) T, and R, were significantly reduced by apyrase (2 mg/Kg, ia) an ADP-ATPase, but responses to isoproterenol were unaltered. V did not influence FBF. These findings suggest that hindlimb vasodilation produced with either T or R in the intact dog may involve interactions with platelets resulting in release of vasoactive nucleotides. (Supported by grants from the Amer. Heart Assoc., S.W. Ohio Chapter, and Eli Lilly Co. Reptilase and Venacil were donated by Abbott Labs.)