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Physical training has a beneficial effect on lymphocyte proliferation and ROS status of trained mice

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The purpose of this study were to analyze the effect of regular exercise on spleen & peritoneal exudate ROS (reactive oxygen species) and lymphocyte proliferation by splenocytes. Twenty four female BALB/c mice were randomly divided into trained (TRre, n=6; TRex, n=6) and untrained (UTre, n=6; UTex, n=6) groups. Both groups were further divided equally into two groups where the mice were studied at rest and immediately after 2-hour acute bout of exercise. The animals were bred in the animal facility of the Yonsei university college of medicine, where they were housed in a temperature (22~24℃) and humidity (50~60%) controlled environment, with 12 h photoperiod, and provided with food and water ad libitum.

The trained mice underwent a 10 week endurance swimming training (5 days/wk) in water at 26~29℃ for 60min. Analytical items were weight, proliferative activity, and the production of ROS from spleen lymphocytes and peritoneal exudates cells. All data were expressed as mean and standard deviation by SPSS package program (ver. 10. 0).

The results showed that trained group were much higher proliferative activity than that of untrained group in spleen lymphocytes($p<.05$). This is explained by optimal expression of reactive oxygen species (ROS) in spleen lymphocytes and peritoneal exudate cells following the swim training. However, In the response of an acute bout of exercise, there were little proliferative activity stimulated with Med, ConA and LPS. This is caused by excessive ROS following an acute of exercise ($p<.05$).