**Is Your Horse Fit? The Physiology of Conditioning**

**http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/hrs6942#basic**

**Adaptations with Training**  
  
Five major systems are affected by an adequate period of physical conditioning:

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| 1 | Cardiovascular system - improved capacity to deliver oxygen to the working muscles. |
| 2. | Muscular system - improved capacity to utilize oxygen and more efficient fuel utilization. |
| 3. | Supporting structures (bone, tendon, ligaments, muscle) - an increase in the size and/or strength of these structures. |
| 4. | Temperature regulating system- greater ability to lose body heat during exercise, thus avoiding excessive increases in body temperature. |
| 5. | Central nervous system - improved neuromuscular coordination, which means the horse is better able to complete the skills required for its particular discipline. All of these adaptations allow the fit horse to exercise more efficiently, as well as perform more work before fatiguing. Tired horses are more likely to take a misstep or overextend themselves; so proper conditioning may also prevent injury to muscle and supporting structures. The average amount of training needed to elicit these adaptations is presented in Table 1. |

**Table 1: Average time course for structural and physiological adaptations to exercise training in horses.**

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| **Adaptation** | **Time Course** |
| Increase in VO2MAX | 1 - 2 weeks |
| Increase in plasma volume | 1 - 2 weeks |
| Improved sweating response | 1 - 2 weeks |
| Increase in red blood cells & haemoglobin | 2 - 4 months |
| Increase in muscle capillaries | 3 - 6 months |
| Increase in muscle mitochondria | 4 - 6 months |
| Increase in muscle aerobic enzymes | 4 - 6 months |
| Increase in bone density\* | 4 - 6 months |
| Strengthening of tendons and ligaments\* | 4 - 6 months |

\*Available research on training adaptations of supporting structures is limited.