

EXERTIONAL RHABDOMYOLYSIS: CURRENT CONTROVERSIES

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Rhabdomyolysis (RM) is a syndrome associated with skeletal muscle breakdown and leakage of the intracellular contents into the plasma. RM can lead to myoglobinuria, acute renal failure, and potentially life-threatening metabolic derangements. Acquired etiologies include muscle trauma and crush injuries, muscle ischemia, drugs and toxins, infections, inflammatory muscle diseases, and overexertion. Inherited etiologies include abnormalities of genes that encode for proteins involved in the glycolytic or fatty acid oxidation pathways, or in the mitochondrial respiratory chain. Exertional rhabdomyolysis (ER) is rhabdomyolysis that results from excessive physical exertion. This presentation will focus specifically on ER and discuss the following controversies in sports medicine:

1. Currently, there is **no universally agreed upon definition** of rhabdomyolysis. Some have defined it as an elevation of the serum enzyme creatine kinase (CK) above a set level, e.g., 5 or 10 times normal;
2. Is there **guidance** available to assist clinicians with deciding: which ER patients need a **detailed evaluation**;
3. When can an ER patient **return to play/duty**.
4. Does **extreme exercise** contribute to ER in a warrior athletes (WA)?
5. Is **sickle cell trait (SCT)** a culprit or an innocent confounder in ER?
6. Do **dietary supplements** contribute to ER in a WA?

Recommended Reading:

1. Knapik JJ, **O'Connor FG**. Exertional Rhabdomyolysis: Epidemiology, Diagnosis, Treatment, and Prevention. *J Spec Oper Med*. Fall 2016;16(3):65-7.
2. Asplund CA, **O'Connor FG**. Challenging Return to Play Decisions: Heat Stroke, Exertional Rhabdomyolysis, and Exertional Collapse Associated With Sickle Cell Trait. *Sports Health*. 2016 Mar;8(2):117-25.
3. Quattrone RD, Eichner ER, Beutler A, Adams WB, **O'Connor FG**. Exercise collapse associated with sickle cell trait (ECAST): case report and literature review. *Curr Sports Med Rep*. 2015 Mar-Apr;14(2):110-6.
4. Szczepanik ME, Heled Y, Capacchione J, Campbell W, Deuster P, **O'Connor FG**. Exertional rhabdomyolysis: identification and evaluation of the athlete at risk for recurrence. *Curr Sports Med Rep*. 2014 Mar-Apr;13(2):113-9
5. Deuster PA, Contreras-Sesvold CL, **O'Connor FG**, Campbell WW, Kenney K, Capacchione JF, Landau ME, Muldoon SM, Rushing EJ, Heled Y. Genetic polymorphisms associated with exertional rhabdomyolysis. *Eur J Appl Physiol*. 2013 Aug;113(8):1997-2004
6. **O'Connor FG**, Bergeron MF, Cantrell J, Connes P, Harmon KG, Ivy E, Kark J, Klossner D, Lisman P, Meyers BK, O'Brien K, Ohene-Frempong K, Thompson AA, Whitehead J, Deuster PA. ACSM and CHAMP Summit on Sickle Cell Trait: Mitigating Risks for Warfighters and Athletes. *Med Sci Sports Exerc*. 2012 Nov;44(11):2045-2056.
7. Bergeron MF, Nindl BC, Deuster PA, Baumgartner N, Kane SF, Kraemer WJ, Sexauer LR, Thompson WR, **O'Connor FG**. Consortium for Health and Military Performance and American College of Sports Medicine consensus paper on extreme conditioning programs in military personnel. *Curr Sports Med Rep*. 2011 Nov;10(6):383-9.