

The Effect of Swimming Various Intensities on Creatine Kinase Activity and Histopathological Features of The Musculus Vastus Lateralis in Obese Rats

Title	The Effect of Swimming Various Intensities on Creatine Kinase Activity and Histopathological Features of The Musculus Vastus Lateralis in Obese Rats
Author Order	3 of 5
Accreditation	2
Abstract	<p>Obesity is considered a global health problem that has reached epidemic proportions and significantly affects almost all physiological functions of the body. Swimming can reduce fat levels so that it can reduce obesity conditions which can trigger other cases. However, training that exceeds capacity can cause skeletal muscle damage. This study aims to determine the effect of swimming of various intensities (light, moderate and heavy) on creatine kinase (CK) activity and the histopathological appearance of the musculus vastus lateralis in obese rats (<i>Rattus norvegicus</i>). This study used a true experimental using a Completely Randomized Design (CRD) posttest-only control group design approach. The sample in this research; white rat (<i>Rattus norvegicus</i>) male Wistar strain, body weight 150-200 grams, and aged 6-8 weeks. Obesity induction; Pokphand 551, BOLT, cassavas and carrots. The rats were divided into 5 groups and each group consisted of 4 rats. Swimming is given once per day every morning for 14 days. CK activity was measured using UV-Vis spectrophotometer and histopathological preparations of the musculus vastus lateralis using Hematoxyline Eosine (HE) staining. Swimming significantly ($p < 0.05$) reduced CK activity. The best results were found in group 4 with a reduction of 37.29% from obese controls, and an increase of 11.53% from healthy controls. The best CK activity values were obtained by the group that had values closest to those of healthy controls. The histopathology results of group 4 showed histopathological improvement based on reduced inflammatory infiltration, fiber profile abnormalities and the presence of myofiber hypertrophy as a form of cell adaptation. Group 4 (obesity + moderate intensity swimming) is the best treatment to reduce CK activity and improve the histopathology of the musculus vastus lateralis.</p>
Publisher Name	Universitas Pendidikan Indonesia
Publish Date	2024-04-01
Publish Year	2024
Doi	DOI: 10.17509/jpjo.v9i1.66213
Citation	
Source	JURNAL PENDIDIKAN JASMANI DAN OLAAHRAGA
Source Issue	Vol 9, No 1 (2024): Improve physical competence, fitness, motivation, and enjoyment of physical acti
Source Page	82-88
Url	https://ejournal.upi.edu/index.php/penjas/article/view/66213/pdf
Author	Dr dr. SUSIANA CANDRAWATI, S.Ked, Sp.K.Or