韦晓英,马 彬,吴洪海,陈应柱,朱永泽.游泳运动对大鼠心房肌细胞超微结构的影响[J].中国康复医学杂志,2013,(4):319~324

游泳运动对大鼠心房肌细胞超微结构的影响　点此下载全文

韦晓英　马 彬　吴洪海　陈应柱　朱永泽

扬州大学医学院，扬州，225001

基金项目：

DOI：



摘要：

摘要目的：探讨不同运动量游泳运动对大鼠心房肌细胞超微结构的影响，以期为运动对心肌的生理和病理变化研究提供参考资料。方法：SD大鼠分为不同运动量运动组和力竭运动组，前者进行12周的低、中和高运动量游泳运动，后者进行1次力竭游泳运动。取右心房肌组织进行常规透射电镜样品制备，透射电镜观察心房肌细胞超微结构的变化。结果：低和中运动量运动可使肌原纤维排列整齐，Z线变粗，I带增宽；线粒体数量增加，嵴密集排列；内质网和高尔基体丰富，合成大量心钠肽，并快速地分泌到细胞外；细胞连接增强。高运动量运动，导致肌原纤维部分Z线紊乱，核膜内陷，线粒体嵴疏松，细胞连接减弱。力竭运动对肌原纤维损伤较重，细胞核染色质固缩凝集，线粒体形态改变，嵴消失；但肌原纤维和线粒体的形态结构在力竭后24h得以部分恢复。结论：高运动量和力竭运动可以导致心房肌超微结构破坏。

关键词：游泳运动　大鼠　心房肌　超微结构

Effect of swimming exercise on ultrastructure of atrial muscle of rat　Download Fulltext

Medical College, Yangzhou University, Yangzhou, 225001

Fund Project:

Abstract:

Abstract Objective: To explore the effects of different loading swimming exercises on structure of atrial muscle in rat, so as to provide some information for the changes of physiology and pathology by exercise-induced injury and recuperation of cardiac muscle. Method: SD rats were randomly divided into two groups: different loading exercise group and exhaustive exercise group. In the different loading exercise group, the 12-week low, moderate and high loading swimming model was carried out in rats. In the exhaustive exercise group, single exhaustive swimming was carried out in rats. After exercises, rat's atrial muscles were cut off, and treated with routine procedures of transmission electron microscopy before observing the structure of atrial muscle under transmission electron microscope. Result: In low and moderate loading swimming exercise rats, the muscle fibrils arranged orderly, the "Z" lines became thicker and the "I" bands became wider. The quantities of mitochondria increased, and their cristae arranged densely. The endoplasmic reticulum and Golgi complex revealed high metabolic activity, atrial natriuretic peptide was synthesized and secreted to the outside of cell. The cell junction enhanced. In high loading swimming exercise rats, the "Z" lines of some muscle fibrils became disordered, the nuclear envelope invaginated, the mitochondrion cristae loosened, and the cell junction weakened. For exhaustive swimming exercise rats, the structure of muscle fibrils injured seriously, chromatin condensed, the morphology of some mitochondria changed and their cristae disappeared, while the intact structure of muscle fibrils and mitochondria recovered partly at 24 hours after exhaustive swimming exercise. Conclusion: High loading and exhaustive exercises could destroy the ultrastructure of atrial muscle.

Keywords:swimming exercise　rat　atrial muscle　ultrastructure

查看全文　查看/发表评论　下载PDF阅读器