

# 运动疗法联合激光疗法对大鼠骨代谢相关指标的影响

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摘要:

36

SD

9

8

关键词:

中图分类号: S854.5+4;R730.57

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## The Effect of Exercise Therapy in Combination with Laser Therapy on the Indexes in Relation with Rat Bone Metabolism

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**Abstract:** To explore the exercise therapy in combination with laser therapy used to analyze the treatment effect on the rat bone metabolism, so as to guide the clinical treatment of osteoporosis. This paper selected 36 healthy male SD rats, and randomly divided into pure movement group, pure laser treatment group, exercise therapy in combination with laser therapy group and the CK, each group of nine. Four groups of rats bone mineral density were analyzed after treatment for 8 weeks, bone structure and bone metabolic indexes in serum and bone tissue had done too. The results showed that the femur density and systemic density of control group after treatment were significantly decreased than before. The femur density and systemic density of exercise group and laser group and combination group after treatment were significantly higher than before. And the increased bone mineral density range in combination group was more obvious than that in the exercise group and laser group. The trabecular bone area of exercise group and laser group and combined group was significantly greater than that in CK. The trabecular bone area in combination group was higher than that in exercise group and laser group. The bone metabolism related index of bone tissue and serum in exercise group and laser group and combined group was significantly better than that in CK. The bone metabolism related index of bone tissue and serum in combination group was the best. Exercise therapy, low intensity laser irradiation, and the combination application, all of them can obviously increase bone density, improve the bone structure. The effect of exercise therapy in combination with laser therapy is more significant. It can be used in the prevention of osteoporosis in the elderly to improve the old local and whole body bone, and it is worth to promote clinically.

**Keywords:** Osteoporosis; exercise therapy; laser therapy; rats; bone structure and bone metabolism

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## 1 材料与amp;方法

### 1.1 材料

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作者简介: (1969-), , , , , ,

36 SD  
 8 343~392 g (361±20) g

9  
 $P > 0.05$

### 1.2 实验方法

#### 1.2.1 运动训练

m/min -5° 15 min 8 15

#### 1.2.1 低强度的激光照射

810 nm 5 mm

30 s 8  
 30 min

### 1.3 观察指标

#### 1.3.1 骨密度检测

X

#### 1.3.2 骨结构检测

10%

24 h EDTA 5

5 μm

#### 1.3.3 骨代谢指标检测

### 1.4 统计学分析

SPSS14.0

$\bar{x} \pm s$

$\chi^2$

$P < 0.05$

## 2 结果与分析

### 2.1 骨密度检测

1  
 表1 四组大鼠骨密度情况比较 (g/cm<sup>2</sup>)  
 Table 1 Comparison among bone density of rats in four groups

Reciprocal	Thighbone density		Body density	
	Before treatment	Treatment later	Before treatment	Treatment alter
9	0.230±0.008	0.218±0.006	0.189±0.007	0.172±0.005
9	0.229±0.011	0.245±0.009	0.188±0.006	0.194±0.006
9	0.230±0.006	0.240±0.010	0.187±0.007	0.195±0.007
9	0.230±0.009	0.247±0.011	0.188±0.07	0.198±0.008

### 2.2 骨结构检测

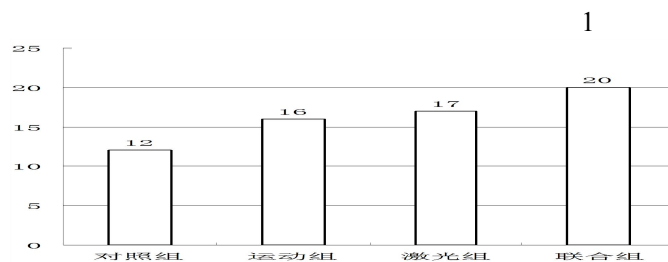


图 1 四组大鼠骨小梁面积比较  
 Fig.1 Comparison among areas of trabecular bone of rats in four groups

### 2.3 骨组织检测

2

### 2.4 血清检测

表 2 四组大鼠股骨组织中骨代谢相关指标变化比较  
 Table 2 Comparison of related metabolic index change  
 of thighbone tissue in rats between four groups

	对照组 CK	运动组 Movement	激光组 Laser	联合组 Combination
骨钙素(μg/L)	8.21±0.86	11.32±1.21	10.86±1.06	13.21±1.23
碱性磷酸酶(U/L)	312.54±11.64	336.42±13.25	339.36±12.53	356.6±9.78
抗酒石酸酸性磷酸酶(U/L)	8.45±0.46	6.53±0.71	6.44±0.72	6.13±1.03

3

表 3 四组大鼠血清中骨代谢相关指标变化比较  
 Table 2 Comparison of related metabolic index change  
 of serum in rats between four groups

	对照组 CK	运动组 Movement	激光组 Laser	联合组 Combination
骨钙素(μg/L)	352.12±12.36	387.54±14.32	385.31±15.21	399.86±15.65
碱性磷酸酶(U/L)	103.54±15.64	116.42±13.21	109.36±12.33	142.6±8.75
抗酒石酸酸性磷酸酶(U/L)	4.65±0.58	4.22±0.62	4.21±0.72	3.88±0.87

### 3 讨论

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