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شبكة المعلومـــات الجامعية التوثيق الالكتروني والميكروفيا.



# جامعة عين شمس

التوثيق الالكتروني والميكروفيلم



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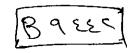
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## EFFECT OF AEROBIC TRAINING EXERCISE ON NATURAL KILLER CELLS BEFORE AND AFTER PUBERTY IN GIRLS

#### Thesis

Submitted in partial fulfillment for requirement of master degree

#### Ву

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#### Abstract

Background: Effect of exercise on the immune system becomes a very interesting area for research especially in children and period of puberty. Purpose: This study was conducted to investigate the effect of aerobic training exercise on Natural Killer (NK) cells before and after puberty in girls. Subjects: sixty healthy girls aged from 10-15 years divided into two equal groups. The mean age (11.0  $\pm$ 0.59) for group A (pre-pubertal) and (14.5  $\pm$ 0.78) for group B (post pubertal). Material: Both groups received aerobic training exercises by walking on treadmill with moderate intensity 60-75% of the maximum heart rate 3 sessions per week for 4 weeks. Blood samples were drawn from both groups before beginning the training and after 24 hours of completing last session to measure NK percentage by measuring its 3phenotypes: CD3. CD16<sup>+</sup>, CD56 <sup>+</sup> . Results: There was significant difference between before and after exercise in both groups in CD16<sup>+</sup> and the dual (CD16<sup>+</sup> + CD56 <sup>+</sup> )(P=0.000) and between before and after exercise in measuring CD56<sup>+</sup> in group A, in CD56<sup>+</sup> not significant difference between before and after exercise in group B(P=0.110) between two groups there was significant difference in pre training level of CD56 + (P=0.02) and in post-training level of CD16<sup>+</sup> and the dual CD16<sup>+</sup> + CD56<sup>+</sup> (P=0.000), there was no significant difference in post-training level of CD56<sup>+</sup> (P=1.000)and also in pre-training level of CD16<sup>+</sup> (p=0.266). Conclusion: The aerobic training exercise had a potent effect on NK cells percentage in healthy girls before and after puberty and the effect was clear on NK cells phenotypes: CD16<sup>+</sup> and CD56 <sup>+</sup> and was greater in group A (pre-pubertal) than group B (post-pubertal). Exercise training can substitute the suppressive effect of estrogen on NK cells. So it was recommended with training of girls in pre& post puberty age and especially for pre-puberty girls.

Key Words: Natural Killer cells, Aerobic exercise, Puberty, immune system.



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