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Exercise-Induced Genetic Damage: A Review

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ABSTRACT Physical activity improves the quality of life and well being in healthy persons and has been demonstrated to have beneficial effect on quality of life during and after therapy in cancer patients. Considerable evidence on the other front has shown an association between physical activity and genetic damage and also implied a possible role of physical activity on cancer incidence. Diverse biologic mechanisms have sought to explain the complex relationship between energy balance, physical activity and genetic damage. Primary and secondary reactions have been implicated. These include free radical damage, immune dysfunction, mechanical injury, sex hormones, growth factors, cytokines, etc. Alterations in pro-and anti-apoptotic proteins during long-term physical activity can possibly explain why exercise training relates to inconsistence in cancer causing. Future research is needed in this direction for possible intervention trials. The value of antioxidant supplementation for attenuating post-exercise tissue damage cannot be undermined though more conclusive studies are required for exact recommendations.