

## The Capillary Blood *In-Vivo* Micronucleus Test: Wrestlers Exercising at Akharas

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### Abstract

Some studies have indicated the potential for strenuous exercise to cause genetic damage. In order to investigate whether wrestling can induce any chromosomal damage, micronuclei were scored in small T-lymphocytes of wrestlers using the *in vivo* capillary blood micronucleus (MN) assay. Blood samples from 15 wrestlers and ten controls were analysed. Requisite anamnestic data were collected on a pre-designed proforma. The wrestlers (15–30y, middle socio-economic class) were mostly non-vegetarians, taking alcohol and smoking. Finger-prick capillary blood samples were processed and 2000 cells per individual were scored for MN. The MN frequency in the wrestlers was statistically significant and increased with age, duration and longer routine of heavy exercising. These observations imply that wrestling causes cytogenetic damage indexed as micronucleated cells resulting from aneugenicity and/or clastogenicity. Wrestlers therefore may be prone to long-term consequence with outcomes in terms of cancer and age-related disease.

**Key Words: Chromosomal damage, strenuous exercise**

### Introduction

The art of wrestling as a sport and method of defense goes further back in time than any other exercising record of empty-handed combat. It can be traced back to as far as 3400 BC when the Egyptians practiced wrestling as a favourite past-time event. Images of wrestling artifacts can still be seen on the tomb walls in Egypt. As a game, wrestling has been on the maps since as far back as 708 B.C. when it first featured in the Greek Olympics. Gradually, wrestling modified to become a sport with safety guidelines and formal training methods. Amateur wrestling is the most widespread form of sport wrestling. There are two international wrestling styles performed in the Olympic Games under the supervision of FILA (Fédération Internationale des Luttes Associées or International Federation of Associated Wrestling Styles): Freestyle and Greco-Roman. Freestyle is possibly derived from

the English Lancashire style. A similar style, commonly called Collegiate, Folkstyle, or Scholastic, is practiced in secondary schools, colleges, and younger age groups in the United States.

Traditional Indian wrestling since 11 AD has however been integral to Hinduism. It is known as *Pahalwani* or *Mallavidya* and is a form of exercise that defines the essence of wrestling and in being human so as to achieve self discipline through physical fitness as well as being an identity and purity of the body, mind and spirit. Trainees reside at the *Akharas* (temples, gyms), leaving civilization and entering the world of tranquility and acknowledgment. *Akharas* are equipped with fine grit dirt floors to bring one closer to natural elements of the earth (sifted and saturated with essential oils to supple the skin of the wrestler when he is wrestling). The oils also keep the dirt clean and compressed for the body to tumble upon.