

## PUBLIC HEALTH

# Trampoline Dangerous

► **DEATH AND INJURY** have resulted from acrobatics on the trampoline, the popular canvas mat on springs.

Five cases of severe injuries to the nervous system resulting from trampoline accidents are reported in the *Journal of the American Medical Association*, 174:1673, 1960. One of the injured, a 19-year-old member of a university gymnastics team, died.

An editorial accompanying the article says, "In view of the popularity of the trampoline, physicians and health agencies throughout the nation should be alerted to the present problem."

With proper supervision trampolining can remain safe and can provide "an enjoyable means of exercise for a flabby nation," the editorial concludes.

Drs. William G. Ellis, David Green and A. L. Sahs of the University Hospitals, Iowa City, Iowa, and Norman R. Holzapfel, assistant professor and gymnastics coach, State University of Iowa, report on the five cases.

"When the maneuvers are performed imperfectly or incompletely, they lead only to disaster."

The number of accidents is much larger than the five described, but up to now, the investigators believe, no documented reports have appeared in major medical journals.

All five were men, from 17 to 38 years old.

To prevent further serious accidents, the investigators urged local departments of health to establish minimum regulations governing trampoline amusement centers. Regulations should cover the following points:

1. The presence of qualified instructors at all times.
2. The type of equipment and its continued repair.
3. Minimum number of persons on trampoline at the same time.
4. Minimum distances between trampolines and between them and other obstructions.
5. Prohibition of eating on trampolines.
6. Proper lighting.
7. Enforced rest periods.
8. Compulsory wearing of shirts and socks while jumping.
9. Registration of patrons, including previous gymnastic experience and whom to contact in case of accident.
10. A training program for the patrons before they attempt such maneuvers as somersaults, particularly for children who may not appreciate the risks involved.

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dark-staining masses and crystals composed of millions of virus particles. The damaged cells also become round and clump in grape-like clusters, Dr. Ginsberg said.

The virus particles contained deoxyribonucleic acid, or DNA, which usually serves as the "core" in the mature virus, and protein, usually wrapped around the DNA like an overcoat, or skin.

The larger intranuclear masses were mostly viral DNA, which differed from normal cell DNA in chemical properties and chemical structure and was produced in surplus amounts. Viral protein was also produced in excess proportions.

The conclusions drawn from the studies are that the nucleic acid of adenoviruses is derived from a new and unique DNA; that the parts or subunits, DNA and proteins, of the infectious virus are synthesized independently; that these components of the virus are produced in great excess; and that the accumulation of these surplus virus precursors lead to injury of infected cells.

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## MEDICINE

## X-Ray Risks to Mothers Challenged by Study

► **A 12-YEAR STUDY** of the case records of pregnant women who had abdominal X-ray examinations before their children were born has challenged the belief that X-ray exposure during pregnancy may cause a greater risk of leukemia to the child.

The study by Dr. W. M. Court Brown and Dr. Richard Doll covered maternity cases in four London hospitals and four in Edinburgh, Scotland. The total number of children involved was 39,166.

The doctors reported to the Royal Society of Medicine that up to 1958, only nine of these children had died of leukemia. Compared with the British national rate for mortality from leukemia, this rate is 1.5 below average.

The rate shows that the abdominal X-ray examinations did not produce an excess of leukemia deaths, Drs. Court Brown and Doll believe. They said their investigation contradicts the figures presented two years ago by Dr. Alice M. Stewart, head of the department of public health and social medicine at Oxford University.

Dr. Stewart and her colleagues in their pregnancy survey had then said that they found that X-rays to a pregnant woman's abdomen were likely to double the risk of the child dying from an excessive number of leucocytes in the blood or from cancer before the age of ten.

Drs. Court Brown and Doll believe their investigation was as objective as possible and that the 12-year period covered by it provided adequate time for leukemia to have developed, if it was going to at all, although there may be possible sources of inaccuracy in their work.

However, in accordance with the best radiological practice, they urged continued avoidance of unnecessary X-ray examinations during pregnancies.

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## MEDICINE

# Floating Cancer Cells

► **PATIENTS WHO HAVE** had malignant tumors removed may have floating cancer cells that may not give trouble for years following the operation. Only a small percentage of the cells live but they can cause death, scientists discovered after research on mice.

The scientists injected radioactive thymidine into mice after first injecting a certain number of cancer cells into the mice's veins. Thymidine is a natural compound that rapidly growing cells readily take up and incorporate in their genes.

A day or two later, the scientists killed some of the mice and with radiation-detection techniques searched each organ for radioactive cancer cells.

Only eight of every 1,000 injected cancer cells survived. But cells that lodged in the mouse lungs or other organs, within two hours took up the thymidine and other materials needed for cell division and began multiplying to form new cancer colonies.

The researchers said that after the first two days, 100% of the surviving cells divided at a constant rate every 20 hours, and that any slowing of cell division beyond the 20-hour rate by drugs would register anti-cancer effect.

The results of the research help to explain why patients can go for years after cancer operation without recurrence of malignancy.

The findings indicate that cancer cells do not sleep. They divide constantly, and it is only when the colonies become big enough to be seen or felt, to cause pain or trouble, that they are noticed.

Human cancers, starting from a single cell, could grow for many years without detection, the scientists said.

The research, reported by the American Cancer Society, was done by Drs. Renato Baserga, Walter E. Kisielski and Karen Halvorsen of Northwestern University Medical School and the Argonne National Laboratory. The Illinois Division of ACS helped support the studies.

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## VIROLOGY

## Viruses Injure Host Cells With Excess Viral "Skin"

► **VIRUSES GROW** inside the cells they infect and injure their host cells by producing excess amounts of viral "skin" and viral "insides" in two separate processes.

Dr. Harold S. Ginsberg, microbiologist at University of Pennsylvania School of Medicine, told the National Academy of Sciences meeting, Philadelphia, that cells grown in tissue culture and infected with adenovirus shows striking changes in their nuclei.

The nuclei increase in size and show large