

## Picture Reports and Short Reports

### Fracture of humerus during use of an arm wrestling machine

There have been several reports of fractures of the humerus associated with arm wrestling.<sup>1,2</sup> We report a similar injury sustained during the use of an automatic arm wrestling machine, an event that to our knowledge has not been described previously.

The Arm Wrestler is a recreational machine that can be used alone or with an opponent (figure). The user enters details of his or her sex and weight, and an electric motor powers the levers to act as an opponent or to give the opponent the appropriate help or handicap; thus a weaker person has the opportunity to defeat a stronger player.

A 31 year old man was using the machine with an opponent when he felt a sudden pain in the right arm and was unable to continue. Radiographs showed a spiral fracture of the distal humeral shaft. There was no radial nerve palsy. He was treated with a collar and cuff sling with a protective U slab, and the fracture united after 10 weeks.

Previous reports have described fractures of the humerus caused by torsional forces induced by throwing objects such as hand grenades,<sup>3</sup> baseballs,<sup>4</sup> and javelins<sup>5</sup> or by muscular contractions during arm wrestling<sup>1,2</sup> and the use of Bullworkers.<sup>6</sup> The injury sustained is a spiral fracture of the shaft of the distal humerus; there may be comminution with a butterfly fragment, which, according to Moon *et al*, is due to axial loading.<sup>2</sup> Radial nerve palsies have also been reported.<sup>1</sup>

The mechanism as described by Brismar and Spangen entails a strong internal rotational force developed at the shoulder (by the pectoralis major, latissimus dorsi, teres major, and subscapularis) that is resisted by an external rotational force applied by the opponent, transmitted by the long forearm lever through the elbow; the resultant stress may be sufficient to fracture the humerus. This



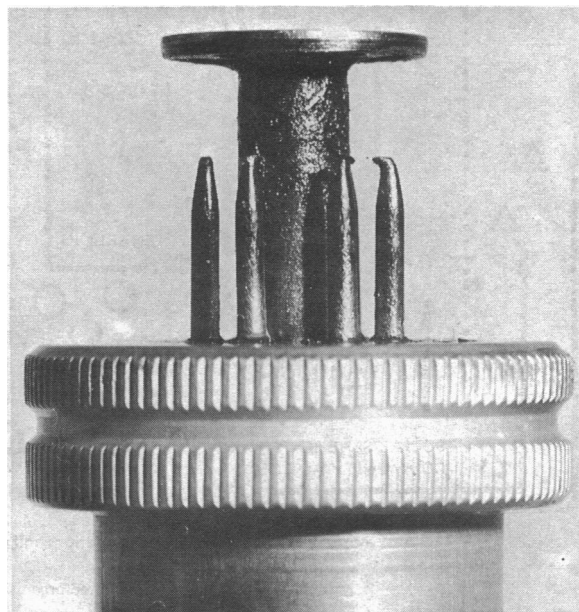
stress may be increased by the machine described, and we regard such machines as being potentially dangerous if incorrectly used.—  
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- 1 Brismar B, Spangen L. Fracture of the humerus from arm-wrestling. *Acta Orthop Scand* 1975;46:707-8.
- 2 Moon MS, Kim HH, Suh KH, Hwang JD. Arm wrestlers' injury: report of seven cases. *Clin Orthop* 1980;146:219-21.
- 3 Chao SL, Miller M, Teng SW. A mechanism of spiral fracture of the humerus. Report of 129 cases following the throwing of hand-grenades. *J Trauma* 1971;11:602.
- 4 Hesmark MH, Klune RF. Ball-throwing fracture of the humerus. *Medical Annals of the District of Columbia* 1952;21:196.
- 5 Waris W. Elbow injuries of javelin throwers. *Acta Chir Scand* 1947;93:563.
- 6 Lynch AF, O'Carroll PF. Bullworker's fracture. *Injury* 1983;14:351-3.

### False negative tuberculin tests: check your Heaf gun

Four patients received tuberculin tests using the Heaf multiple puncture gun (figure). On the strength of the "negative" results obtained one patient received vaccination with BCG, which resulted in a severe local reaction; two patients were misdiagnosed as having sarcoidosis instead of tuberculosis; and in one patient the diagnosis of pulmonary tuberculosis was delayed. The last three cases were later shown to be positive by the tuberculin test. Inspection of the Heaf testing apparatus showed a defective gun: clearly the needles had been blunted, possibly by someone testing the gun against a hard surface. Tests showed that these needles indented the skin, causing the familiar hexagon but no skin penetration. Thus there would have been no inoculation of tuberculin material.

The results of tuberculin tests carried out with the Heaf multiple puncture gun are of considerable epidemiological and clinical importance. The causes of false negative results have been listed as faulty tuberculin material, dilution at the site of inoculation, rapid dissipation of tuberculin due to local inflammation, faulty administration, and inadequate interpretation of the response.<sup>1</sup> To this list we now add blunted skin puncture needles. Failure to inspect the gun routinely may lead to potentially serious consequences.—  
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Blunted skin puncture needles on the Heaf gun.

1 Caplin M. *The tuberculin test in clinical practice*. London: Baillière, 1980.