

- 5 Theorell T, Floderus-Myrhed B. "Workload" and risk of myocardial infarction—a prospective psychosocial analysis. *Int J Epidemiol* 1977;6:17-21.
- 6 Schroll M. A longitudinal epidemiological survey of relative weight at age 25, 50 and 60 in the Glostrup population of men and women born in 1914. *Dan Med Bull* 1981;28:106-16.
- 7 Miall WE, Chinn S. Screening for hypertension: some epidemiological observations. *Br Med J* 1974;iii:595-600.
- 8 Kornitzer MD, Dramaix M, Gheysens H. Incidence of ischaemic heart disease in two Belgian cohorts followed during 10 years. *Eur J Cardiol* 1979;6:455-72.
- 9 Svardssudd K, Tibblin G. A longitudinal blood pressure study. *J Chronic Dis* 1980;33:627-36.
- 10 Rosenman RH, Brand RJ, Jenkins CD, Friedman M, Straus R, Wurm M. Coronary heart disease in the western collaborative group study. Final follow-up experience of 8½ years. *JAMA* 1975;233:1000-9.
- 11 Haynes SG, Feinleib M, Kannel WB. The relationship of psychosocial factors to coronary heart disease in the Framingham Study. III: eight-year incidence of coronary heart disease. *Am J Epidemiol* 1980;111:37-58.
- 12 Epstein FH, Napier JA, Higgins MW. The Tecumseh study: design, progress and perspectives. *Arch Environ Health* 1970;21:402-7.
- 13 Rabkin SW, Mathewson FAL, Ping-Hwa HSU. Relationship of body weight to development of ischaemic heart disease in a cohort of young North American men after a 26 year observation period: the Manitoba study. *Am J Cardiol* 1977;39:452-8.
- 14 Rhoads GG, Kagan A. The relationship of coronary disease, stroke and mortality to weight in youth and middle age. *Lancet* 1983;i:492-5.
- 15 Ekerdt DJ, Sparrow D, Glynn RJ, Bosse R. Change in blood pressure and total cholesterol with retirement. *Am J Epidemiol* 1984;120:64-71.
- 16 Harlan WR, Oberman A, Mitchell W, Graybiel A. A thirty-year study of blood pressure in a white male cohort. *Clinical Research* 1971;19:319.
- 17 Hawthorne VM, Greaves DA, Beevers DG. Blood pressure in a Scottish town. *Br Med J* 1974;3:600-3.
- 18 Stone MC. The influence of age, sex and other risk factors. In: *Hypertension in primary care*. London: Royal College of General Practitioners, 1980. (Occasional Paper 12.)
- 19 Atkins E, Cherry NM, Douglas JWB, Kiernan KE, Wadsworth MEJ. The 1946 British birth cohort: an account of the origins, progress and results of the National Survey of Health and Development. In: Mednick SA, Baert AE, eds. *Prospective longitudinal research: an empirical basis for the primary prevention of psychosocial disorders*. Oxford: Oxford University Press, 1981:25-30.
- 20 Maxwell MH, Waks UA, Schroth PC, Karam M, Dornfeld LP. Error in blood-pressure measurement due to incorrect cuff size in obese patients. *Lancet* 1981;ii:33-6.
- 21 Health Departments of the UK. *Tar, carbon monoxide and nicotine yields of cigarettes*. London: HMSO, 1983. (TCN 3.)
- 22 Roberts J, Maurer K. *Blood pressure levels of persons 6-74 years in the United States, 1971-74*. Washington DC: United States Department of Health Education and Welfare, National Centre for Health Statistics, 1977. (National Health Examination Survey, Series 11 No 203.)
- 23 Hurwich BJ, Rosner B, Nubani N, Ka EH, Lewitter FI. Familial aggregation of blood pressure in a highly inbred community, Abu Ghosh, Israel. *Am J Epidemiol* 1982;115:646-56.
- 24 Longini IM, Higgins MW, Hinton PC, Moll PP, Keller JB. Environmental and genetic source of familial aggregation of blood pressure in Tecumseh, Michigan. *Am J Epidemiol* 1984;120:131-44.
- 25 Miall WE, Oldham PD. The hereditary factor in arterial blood pressure. *Br Med J* 1963;2:75-80.
- 26 Oberman A, Lane NE, Harlan WR, Graybiel A, Mitchell RE. Trends in systolic blood pressure in the thousand aviator cohort over a twenty four year period. *Circulation* 1967;36:812-22.
- 27 World Health Organisation. *International classification of diseases. 9th revision, 1975*. Vol 2. Geneva: WHO, 1978.
- 28 Marmot MG, Adelstein AM, Robinson N, Rose GA. Changing social-class distribution of heart disease. *Br Med J* 1978;2:1109-12.
- 29 Marmot MG. Culture and illness: epidemiological evidence. In: Christie MJ, Mellett P, eds. *Foundations of psychosomatics*. London: John Wiley, 1981:323-40.
- 30 Douglas, JWB. *The home and the school*. London: McGibbon and Kee, 1964.
- 31 Cherry N. Stress, anxiety and work. A longitudinal study. *Journal of Occupational Psych* 1978;51:259-70.
- 32 Kagan A, Gordon T, Rhoads GG, Schiffman JC. Some factors related to coronary heart disease incidence in Honolulu Japanese men: the Honolulu heart study. *Int J Epidemiol* 1975;4:271-9.
- 33 Jarret RJ, Shipley MJ, Rose G. Weight and mortality in the Whitehall study. *Br Med J* 1982;285:535-7.
- 34 Royal College of Physicians. Obesity. *J R Coll Physicians Lond* 1983;17:5-65.
- 35 Waldron I. Sex differences in illness incidence, prognosis and mortality. *Soc Sci Med* 1983;17:1107-23.
- 36 Jenkins CD. Low education: a risk factor for death. *N Engl J Med* 1978;299:95-6.
- 37 Haynes SG, Levine S, Scotch N, Feinleib M, Kannel WB. The relationship of psychosocial factors to coronary heart disease in the Framingham study. I: methods and risk factors. *Am J Epidemiol* 1978;107:362-83.
- 38 Savdie E, Grosslight GM, Adena MA. Relation of alcohol and cigarette consumption to blood pressure and serum creatinine levels. *J Chronic Dis* 1984;37:617-23.
- 39 Reid DD, Hamilton PJS, McCartney P, Rose G, Jarret RJ, Keen H. Smoking and other risk factors for coronary heart disease in British civil servants. *Lancet* 1976;iii:979-84.
- 40 United States Surgeon General. *The health consequences of smoking: cardiovascular disease*. Rockville: Department of Health and Human Services, 1983.
- 41 Central Statistical Office. *Social trends*. London: HMSO, 1972 et seq.
- 42 Department of Health and Social Security. *Diet and cardiovascular disease*. London: HMSO, 1984. (Reports on Health and Social Subjects, No 26.)
- 43 Wadsworth MEJ, Peckham CS, Taylor B. The role of national longitudinal studies in the prediction of health, development and behaviour. In: Walker DK, Richmond JB, eds. *Monitoring child health in the United States*. Cambridge, Massachusetts: Harvard University Press, 1984:63-83.

(Accepted 25 September 1985)

## SHORT REPORTS

### Helping people to stop smoking: randomised comparison of groups being treated with acupuncture and nicotine gum with control group

The two treatments most often studied in helping people to stop smoking are acupuncture<sup>1,2</sup> and nicotine gum.<sup>3,4</sup> We report the results of a randomised trial comparing the efficacy of these treatments with that of a control treatment over 12 months of follow up.

#### Subjects, methods, and results

We advertised among the general public asking for volunteers to participate in the trial. Although a recent poll reported that almost half the smokers in France wished to stop smoking, we had to contact nearly 35 000 smokers to enrol 651

The criteria for success were the proportion of people who had completely stopped smoking one and 13 months after entering the study and evolution of this proportion.

Subjects who claimed to have stopped smoking were followed up by post every three months after stopping. Those still smoking after one month were not followed up afterwards and were counted as failures, as were non-respondents to mailings sent to those who did not attend the third group therapy session. Half of the ex-smokers were visited at home at one year and their expired carbon monoxide concentration measured (carbon monoxide breath kit, Catalyst Research Corporation). Concentrations greater than five parts per million were attributed to smoking. We estimated that 200 participants in each group were necessary to show a reduction in the prevalence of smoking after one month from 75% in the control group to 60% in the active treatment groups ( $\alpha=5\%$ ,  $\beta=10\%$ ).

Altogether 224 subjects were given acupuncture, 205 nicotine gum, and 222 the control treatment. No significant difference was found between the three groups for sex, age, age at first cigarette, daily consumption, previous attempts to stop smoking, and frequency of inhalation. The proportion of non-respondents (about 6%) did not differ between the three groups. None among those whose exhaled concentration of carbon monoxide was checked was found to be smoking. The proportion of ex-smokers at one and 13 months was significantly lower in the

No (%) of ex-smokers one and 13 months after entry to study by treatment group

	Acupuncture (n=224)	Gum (n=205)	Control (n=222)	p Values of tests			
				Global	Acupuncture v control	Gum v control	Acupuncture v gum
At one month	43 (19)	46 (22)	18 (8)	0.0001	0.001	0.00001	NS
At 13 months	17 (8)	24 (12)	6 (3)	0.002	0.02	0.001	NS

participants. Adults smoking at least five cigarettes a day were eligible. We excluded women who were pregnant or breast feeding and people with gastric ulcers or a history of heart disease. Treatment (acupuncture, nicotine gum, or a control treatment) was allocated by balanced randomisation, each group receiving three one hour sessions of group therapy during the first month.

In the group given acupuncture the needles were placed bilaterally for 30 minutes at the "shuai gu" and "qiuhou" points. In the group given nicotine gum 105 pieces of gum, each containing 2 mg nicotine, were distributed to each participant. Subjects in the control group were given minimal intervention, consisting of a cigarette case with a lock controlled by a time switch, which they could regulate at will.

control group than in the groups given acupuncture and gum (table). The evolution of this proportion throughout the follow up period showed no significant difference between the three groups.

#### Comment

The groups given acupuncture and nicotine gum showed a better response than the control group. The lack of difference between the two active treatments may have been due to a lack of power: the number of subjects was

insufficient to enable the active treatments to be compared. Acupuncture and nicotine gum were effective in helping smokers to stop smoking during the first month but did not reduce the tendency to relapse after that time.

The subjects in our trial did not take the initiative in coming to a clinic to stop smoking but were invited to take part. This may explain our low long term rate of success compared with that of withdrawal clinics.

We thank the Haut Comité d'Aide à la Lutte Contre le Cancer, France, for financial support and A B Leo and Co, Sweden, for financial support and for supplying the gum. We are indebted to Robert Molimard for participation, to Catherine Gros, Gérard Lavianne, and Benoit Ponsot for practical help, and to Susheela Fallah for technical help.

- 1 Lamontagne Y, Annable L, Gagnon MA. Acupuncture for smokers: lack of long-term therapeutic effect in a controlled study. *Can Med Assoc J* 1980;122:787-90.
- 2 Cottraux JA, Harf R, Boissel JP, Schbath J, Bouvard M, Gillet J. Smoking cessation with behaviour therapy or acupuncture—a controlled study. *Behav Res Ther* 1983;21:417-24.
- 3 Hughes JR, Miller SA. Nicotine gum to help stop smoking. *JAMA* 1984;252:2855-8.
- 4 Anonymous. Nicotine chewing gum [Editorial]. *Lancet* 1985;i:320-1.
- 5 Clavel F, Benhamou S. Nicotine chewing gum in general practice. *Br Med J* 1984;289:1308.

(Accepted 7 August 1985)

Unité de Recherches en Epidémiologie des Cancers, Institut National de la Santé et de la Recherche Médicale, Institut Gustave Roussy, 94805 Villejuif, France

FRANÇOISE CLAVEL, PHD, epidemiologist  
SIMONE BENHAMOU, MSC, epidemiologist

Département de Statistique Médicale, Institut Gustave Roussy

ASSUMPTA COMPANY-HUERTAS, MD, epidemiologist  
ROBERT FLAMANT, MD, epidemiologist (also at Institut National de la Santé et de la Recherche Médicale)

Correspondence and requests for reprints to: Dr Clavel.

## Squash rackets: a survey of eye injuries in England

With the increasing popularity of the game of squash rackets over the past 15 years there has been a corresponding awareness by ophthalmologists in Western countries of the increased number of ocular injuries. In response to a need for more information on the extent of injuries to the eyes the Squash Rackets Association set up a working party, which carried out a survey of eye injuries sustained during squash from October 1982 to March 1983.

### Subjects, methods, and results

Simple reporting cards were used asking ophthalmologists whose names were on the list of the Faculty of Ophthalmologists in England to report any ocular injury sustained from squash during the six month survey period and also to ask their local accident and emergency department to report similarly when appropriate, the ophthalmologist acting as collator of the reporting cards. The reporting card was deliberately brief and covered only the following aspects of the injury: date, age, sex, nature of injury, whether spectacles or eye protectors were worn, and cause of injury (racket, ball, or other).

A total of 339 players (278 men and 61 women) were reported with injuries to the eye and adnexae over the six month survey period. The youngest player was aged 7 and the oldest 61. Most of the injured players (251 out of 339) were aged 20-39.

Most injuries were caused by the ball (235 out of 339), but the racket caused 103 injuries and collision with the wall of the court caused three. Reports of injuries were received from many places in England, but those from areas of dense population and resorts on the south coast predominated.

The table shows the detailed nature of the injuries to the ocular tissues. The concussive nature of most injuries was reflected in the large number of hyphaemas (147) and retinal damage (33)—that is, haemorrhage, oedema, and detachment—whereas there were only three penetrating injuries.

### Comment

Recent reports of the nature of injuries to the eyes sustained during the game of squash have come from North America, Britain, Australia, and France,<sup>1,4</sup> and from these reports the squash ball was consistently recorded as the most common cause of injury. In our survey injuries caused by balls outnumbered those caused by rackets by over two to one (233 caused by balls and 103 by rackets). The severe concussion injuries that caused retinal damage and the penetrating injuries may have caused some degree of permanent visual impairment; 40 out of 339 players had such injuries.

### Detailed nature of injuries to ocular tissues\*

Tissue	Injury	No of injuries
Orbit	Fractures	3
Eyelids	{ Lacerations	50
	{ Bruising	40
Conjunctiva	{ Haemorrhage	18
	{ Lacerations	4
Cornea	{ Abrasions	54
	{ Perforations	2
Anterior chamber	{ Hyphaema	147
	{ Angle recession	3
Iris	{ Iritis	30
	{ Mydriasis	8
	{ Dialysis	1
Lens	Subluxation	2
Vitreous	{ Posterior separation	4
	{ Haemorrhage	2
Sclera	Perforation	1
Retina	{ Haemorrhage/oedema	28
	{ Tear	3
	{ Detachment	2

\* Details of injury were unrecorded in 34 cases. Thirteen admissions to hospital were known but most were not recorded.

There are well recognised limitations in any reporting system that relies on subjects to complete card reports, and the interest and diligence of the ophthalmologists in this survey to report injuries would have varied. Family practitioners were not consulted in our survey. Despite these admitted limitations our results confirm the impression gained by ophthalmologists that injuries to the eyes during the game of squash have become more common. This first attempt to quantify these injuries does give evidence of their widespread nature, and the total number is probably greater than reported for the reasons mentioned above.

The wearing of eye protectors when playing squash has been recommended by some people and official bodies,<sup>5</sup> and several eyeguards are available commercially. There is, however, no national or international standard for an eye protector. The Squash Rackets Association is examining the evidence on injuries and eye protection in the game of squash.

I thank fellow members of the Squash Rackets Association working party, Dr J G P Williams, Mr M Gilkes, and Mr J B Davey. Mr Alan Chalmers, manager of services and administration, Squash Rackets Association, provided the facilities for administering the survey. I also thank the Faculty of Ophthalmologists for support; Miss Cyrilla Chatfield, who performed all the secretarial work; and the ophthalmologists in England, who reported the cases and made this survey possible.

- 1 Ingram DV, Lewkonja I. Ocular hazards of playing squash rackets. *Br J Ophthalmol* 1973;57:434-8.
- 2 Easterbrook M. Eye injuries in squash: a preventable disease. *Can Med Assoc J* 1978;118:303-5.
- 3 More MC, Wortheley DA. Ocular injuries in squash players. *Australian Journal of Ophthalmology* 1977;5:46-7.
- 4 Mondon H, Lefrançois A, Lai C, Hamard H. Traumatisme oculaire au squash. *Bull Soc Ophthalmol Fr* 1981;3:81, 303-6.
- 5 Vinger PF. In: Vinger PF, Hoerner EF, eds. *Sports injuries: the unthwarted epidemic*. Littleton: PS G Publishing Co, 1981:122.

(Accepted 13 August 1985)

Department of Ophthalmology, St Mary's Hospital and Western Ophthalmic Hospital, London

J L KENNERLEY BANKES, MB, FRCS, consultant ophthalmic surgeon

Correspondence to: Mr Kennerley Bankes, Department of Ophthalmology, Western Ophthalmic Hospital, London NW1.

## Humoral antibody response after rubella vaccination

In five schoolgirls tested after vaccination under the Edinburgh rubella programme all were seronegative by single radial haemolysis, while four were positive by enzyme linked immunosorbant assay. Subsequent specimens from all five were positive by single radial haemolysis. This and other, similar results prompted us to examine vaccinees more closely, particularly with respect to the apparently slow response in antibodies detected by single radial haemolysis. Current interest in extending the British rubella programme towards the Edinburgh system<sup>1</sup> would involve