A. C. Crosby

THE HANDS OF KARATE EXPERTS. CLINICAL AND RADIOLOGICAL FINDINGS

A. C. CROSBY, FRCSEd

*Orthopaedic Registrar, N.Staffs. Royal Infirmary,
Stoke-on-Trent, Staffordshire*

ABSTRACT

The hands and wrists of 22 karate instructors who had practiced the sport for a minimum of five years were reviewed. Radiological evidence of a total of ten fractures was found. There was no evidence that practice of the sport predisposed to the early onset of chronic tenosynovitis or osteoarthritis.

Key words: Karate, Hand injury.

INTRODUCTION

Karate is an established sport in Britain and a number of its adherents have practiced for five years or longer. This study was undertaken to determine what effect training practices and competition fighting had on the bones and joints of the hand and wrist. Four activities seem to have the greatest potential for damage: doing pushups on the knuckles, repeated punching of a firm target, sparring and breaking objects.

PATIENTS AND METHODS

Twenty-two instructors who had practiced a variety of styles for a minimum of five years were selected from those karate practitioners who presented with a hand injury at one Accident Department over a period of one year. Each completed a questionnaire relating to training practices, previous injury and presenting complaint. Clinical examination of the hands and wrists was carried out and AP radiographs of both hands were taken.

RESULTS

These are given in Table I.

DISCUSSION

Hand injuries are rare in training and not frequent even in competition fighting. McLatchie (1976), in a survey of 295 two-minute bouts of karate sparring, recorded five contestants with finger injuries. In this study all but one of the bony injuries had occurred during free fighting. The reason for such a low incidence are two fold: most fighting is done with the

Present address:

A. & E. Department
Royal Hallamshire Hospital
Sheffield

TABLE I
The hands of karate experts.

				RESULTS	
Name	Age	Yrs	British	Physical Abnormalities	Radiological Changes
DL	44	18	Yes	Limited flexion MCPJ and (L) mid & index	Previous malunion (L) index and mid metacarpals
JH	42	16	No	Nil	Nil
AS	40	5	Yes	Knuckle pads	Nil
WK	39	10	Yes	Knuckle pads	Nil
DL	38	15	Yes	Pain R index and middle MCPJ	Nil
MS	37	7	Yes	Nil	Nil
MSB	36	5	No	Nil	Nil
AL	35	13	Yes	Persistent discomfort on flexing R wrist	Nil
CC	34	7	No	Nil	Nil
AR	33	10	Yes	Nil	Nil
R-W	33	21	Yes	Nil	Presented with fracture base prox phalanx little finger. Previous fracture (R) scaphoid
JB	32	7	Yes	Slight laxity of collateral lig. in all fingers	Old fracture (R) 5th MC
JC	31	13	No	Instability of radial coll. lig. thumb (R)	Old avulsion fracture of prox phalanx (L) index
JM	30	12	Yes	Slight loss flexion left wrist	Previous fracture L scaphoid. Previous fracture R scaphoid. New fracture R 3rd MC
SW	28	10	Yes	Nil	Nil
AC	27	5	Yes	Knuckle pads	Nil
CH	27	12	No	Limited flexion and extension both wrists. Left gamekeepers thumb	No fractures, but changes in both wrists due to rheumatoid arthritis
GP	26	7	No	Nil	Nil
MF	25	7	No	Lax finger collaterals	Previous avulsion fracture prox phalanx R little finger
AS	23	5	No	Persistent pain right middle MCPJ, but no loss of flexion	Nil
GH	22	9	Yes	Occasional pain R wrist	Nil
PB	19	5	No	Nil	Nil
Number of subjects				22	
Average age				31.8	
Average years of practice				9.9	

***"Breaking" refers to routine use of the hands in breaking objects, e.g. wood, tiles, etc.

hand closed in a fist and the contestants usually pull their punches.

All the fractures recorded were attributed to injuries received during karate practice, though in two cases (subjects JB and MF) the exact nature of injury could not be recalled. All the subjects were male and had commenced the sport after the onset of puberty. Only one subject had chronic discomfort in his wrists, and he attributed the symptoms to rheumatoid arthritis, confirmed by serological tests, and still attending a rheumatology clinic. The repeated minor trauma to the region of the extensor tendons at the knuckle did not produce clinically detectable tenosynovitis or tendon trapping.

Apart from revealing evidence of previous fractures, X-ray

RW aged 33. 21 years karate of several styles. Fracture — base of proximal phalanx little finger caused by a kick.

CH aged 27. 12 years karate. Rheumatoid arthritis. Presented following a blow to the dorsum of the hand. Note loss of joint space in the carpals.

films of the hands showed none of the features of osteoarthritis at the MCP or carpometacarpal joints, and the radiological density of the metacarpals was normal.

Seventeen subjects regularly punched a padded wooden post (Makiwara) and all 22 performed between fifty and one hundred pushups on the knuckles every day. Over zealous use of the Makiwara was recognised as a cause of pain and stiffness in the hands and wrists, but neither practice had a consistently deleterious effect on the mobility of the index and middle metacarpo-phalangeal joints which bore the brunt of the impact. All of the fractures were attributed to injuries sustained during semi-free or free fighting.

A slight laxity of the proximal interphalangeal joint collateral ligaments was noted in five subjects and no explanation is offered for this finding.

Breaking techniques were performed by eleven of the subjects and most commonly involved impact between the ulnar border of the hand and a square of knot-free softwood or a roofing tile. There were no cases of ulnar neuropathy as reported by Neiman and Swan in 1971 but one subject had fractured two metacarpals when punching a brick in 1973 and

has since avoided such demonstrations.

All those interviewed reported frequent minor trauma to the hands but it was uncommon to lose time from work or seek medical treatment. There was an awareness among those interviewed that if the rules for competition and training were followed serious hand injuries could be kept to a minimum. There was also noted to be a general avoidance of traumatic breaking techniques in which an excessive challenge was accepted. Training practices were comparable in the clubs which the subjects ran or attended and conformed to the guidelines laid down by the Martial Arts Commission.

In conclusion, long term and routine practice of karate does not appear to predispose to the early onset of osteoarthritis or tendonitis in the hands and wrists of those studied, though the pursuit of the sport involves a risk of fractures and dislocations, particularly of the phalanges and metacarpals.

References

- McLatchie, G. R., 1976 "An analysis of karate injuries sustained in 295 contests". *Injury* 8 (2) 132.
- Neiman, E. A. and Swan, P. G., 1971 "Karate injuries" (Correspondence). *Brit.Med.J.* (1) 233.