

# INTERFERING SHOULDER PAIN

## INCIDENCE AND MANAGEMENT IN A GROUP OF PROVINCIAL SWIMMERS

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### INTRODUCTION

"Interfering" shoulder pain has been identified as the most common orthopaedic problem amongst elite swimmers in North America (Kennedy and Hawkins 1974; Richardson *et al* 1980; Fowler and Webster 1981; McMaster and Troup 1993).

Competitive swimmers in training are likely to swim between 12 000 metres per day for sprinters or up to 20 000 metres per day for distances swimmers (Richardson *et al* 1980)<sup>9</sup>. As such distances are covered daily for ten to eleven months of the year, five to seven days per week, swimmers are susceptible to overuse injuries of the joint most active during swimming, namely the shoulder. Acute, macrotraumatic injuries may also occur (Jobe and Jobe 1983)<sup>3</sup>. Shoulder pain has been described as "interfering" if it interferes with the swimmer's training or racing "in any way".

With the re-admittance of South African swimmers to international competition, it is relevant to evaluate the type and quality of medical management of these injuries. This management will have to become increasingly specific and comprehensive if our athletes aim to be successful.

The aim of this study was to assess:

- the incidence of "interfering" shoulder pain in a sample of competitive swimmers
- the degree of disability caused by swimming induced shoulder pain
- the medical management programmes of these athletes.

### METHODS

#### SUBJECTS

The swimmers in this study had been selected to represent the Transvaal Swimming Team at the National Aquatic Championships in March 1994. All swimmers had achieved the national qualifying times in the events for which they had been selected. Fifty-seven members of the team of sixty-two participated in the study (91,9%), the remaining five refused to participate. Of the participants, twenty-seven were men and thirty were women. The ages of the subjects ranged from thirteen to twenty-six years. Nine swimming coaches had members of their squad selected for the team. The study was approved by the Committee for Research and Human Subjects of the University of the Witwatersrand and informed consent was obtained from all subjects.

#### PROCEDURE

"Interfering" shoulder pain was clearly defined as pain that

interfered with the swimmer's training or racing "in any way", but excluded temporary muscle soreness or stiffness that might be felt after a strenuous training session or race. A questionnaire which had been designed and tested in a pilot study was administered which asked whether the swimmer was currently experiencing "interfering" shoulder pain and whether the swimmer had experienced this pain during the course of the 1993-1994 season. Those who responded positively to either or both questions then completed the remainder of the questionnaire, which asked further questions regarding the incidence and degree of disability and the management of the pain.

### RESULTS

#### INCIDENCE

Of the fifty-seven swimmers included in the study, twenty-eight (49%) reported "interfering" shoulder pain during the 1993-1994 season, namely fifteen of the thirty female swimmers (50%) and thirteen of the twenty-seven male swimmers (48%).

Twelve swimmers (21%) reported pain at the time of the survey, namely five of the male swimmers (18,5%) and seven of the female swimmers (23%).

Three swimmers (10%) had shoulder pain for the entire 1993-1994 season. Twenty-two swimmers (79%) experienced pain in the first and/or middle thirds of the season. Three swimmers had pain only in the last third of the season.

Twenty-three swimmers (82%) had experienced shoulder pain during previous seasons. One swimmer had had shoulder pain for the previous thirteen seasons.

#### SEVERITY OF PAIN

Sixteen of the swimmers (59%) had experienced "interfering" pains that severely restricted their performance. Two swimmers had pain all the time. Nine swimmers (33%) experienced pain either during or after training, but with limited restriction to their performance and so were included in the study. The remaining swimmer had "interfering" pain that on some occasions was severe enough to limit performance but at other times was reduced enough to be able to train.

Eleven swimmers (40.7%) reported pain at night while lying on the affected shoulder. Ten swimmers (37%) experienced referred pain in the affected upper limb. Eight of these swimmers had pain referring into the arm only, while two of these swimmers had pain referring into the hand.

Both numbness and pins and needles were reported by five swimmers (18.5%). Weakness of the upper limb was reported by thirteen swimmers (48%). Three swimmers (11%) reported both numbness and weakness. One swimmer experienced both numbness and pins and needles. No swimmer reported all three symptoms.

Six swimmers (23%) stated that it took longer than one hour

for their shoulder to return to its pain-free state after cessation of an activity that caused or aggravated the pain. A further six swimmers achieved a pain-free state in fifteen to sixty minutes and ten swimmers (38%) in five to fifteen minutes. Four swimmers (15%) experienced immediate pain relief.

## MANAGEMENT

Twenty-three swimmers (82%) had had their injury evaluated by a health care professional. The remaining swimmers had not sought diagnosis predominantly because they felt the pain was not severe enough. Other reasons cited were "lack of time" and "pain decreased with easing of training".

Seventeen swimmers were diagnosed as having a tendinitis of the supraspinatus or biceps muscles. One swimmer had a muscle "tear" and another swimmer was not given a diagnosis by the health professional, but told that the complaint was due to inadequate stretching. Four swimmers were unaware of the diagnosis.

Six swimmers received no treatment - five because they had not sought intervention and one because no specific diagnosis had been made.

Eighty-two percent of the swimmers were managed by a physiotherapist. The remainder were seen by either a medical practitioner or a chiropractor. None of the swimmers had undergone surgery to the shoulder.

TABLE I: TREATMENT MODALITIES USED

FORM OF TREATMENT	NUMBER OF SWIMMERS (22)	PERCENTAGE OF SWIMMERS
Prescribed analgesics	2	9
NSAIDS	8	36
Electrotherapy	13	59
Massage	18	82
DTF	13	59
Exercise	8	36
Rest	15	68
Ice	2	9
Acupuncture	1	5
Cortisone	5	23

Pain relief was achieved predominantly by rest (15 swimmers) and anti-inflammatory drugs (13 swimmers). Massage was the method of treatment employed most frequently.

TABLE II: TREATMENTS RECEIVED

FREQUENCY OF TREATMENT	NUMBER OF SWIMMERS	PERCENTAGE OF SWIMMERS
Daily/every second day	11	50
Twice weekly/weekly	11	50
NUMBER OF TREATMENTS		
< 4	5	23
4 - 6	9	41
7 - 10	3	13
> 10	5	23

The number and frequency of treatments received by the swimmers are illustrated in Table II.

Ten swimmers reported that the treatment had cured the pain entirely. Two swimmers had less pain following treatment, although the pain had not entirely disappeared. Six swimmers had had a recurrence of the pain following discontinuation of the treatment. The remaining three swimmers made no comment.

## DISCUSSION

The incidence of shoulder pain in forty-nine percent of the group of elite swimmers surveyed in this study was similar to the incidence of shoulder pain observed in United States swimmers by Richardson *et al* in 1980 (45%)<sup>9</sup>, by Fowler and Webster in 1984 (48%)<sup>2</sup> and by McMaster and Troup in 1993 (47%)<sup>7</sup>.

It was not clear from this literature what the incidence of shoulder pain was in males compared to females (Richardson *et al* 1980; Ciullo and Stevens 1989; McMaster and Troup 1993). There was no real difference in the percentage of females affected (50%) in this study.

It was of concern that twelve swimmers had pain at the time of the survey, which was done at the time of the 1993-94 National Championships. This number represents twenty-one percent of the Transvaal squad which probably had a negative influence on the performance of the team.

Although the shoulder pain was described as "interfering" by twenty-eight swimmers, the degree to which it interfered with their performance is unclear, as no comparison was made of the times that they achieved before and after the development of their shoulder pain.

Twenty-one swimmers (78%) presented with one or more neurological signs. Referred pain and paraesthesia in the region of the deltoid muscle may be explained by the fact that embryologically the shoulder is derived from the C5 somatotome. As numerous structures may refer pain to the shoulder region, the possibility remains that the initial diagnosis of swimming - induced tendinitis of the supraspinatus and/or biceps tendon was incorrect.

The need for accurate clinical assessment and differential diagnosis is apparent and practitioners should resist the temptation to label a swimmer with shoulder pain simply as a sufferer of "swimmer's shoulder".

The most widely consulted practitioner was the physiotherapist. A distressing fact emerging from this study is that very little significance was placed on preventative measures by the member of the health team consulted. Stroke modification is regarded as crucial to the management of shoulder pain in swimmers (Penny and Smith 1980; McMaster 1986; Johnson *et al* 1987, Ciullo and Stevens 1989), but appeared to be largely disregarded by the practitioner. Only one swimmer was advised to alter the motion of his stroke.

The emphasis of treatment appeared to be on certain palliative measures. Although the role of massage is perceived to be limited in the treatment of shoulder pain, eighty-two percent of swimmers received massage as part of their treatment<sup>8</sup>. This would serve only to relax muscle groups around the shoulder.

The application of ice, often together with rest, is regarded as the primary treatment for acute shoulder pain<sup>2,4,8</sup>. While sixty-eight percent of the swimmers did rest in some way, only two swimmers (9%) received ice therapy.

The choice of treatment by palliative rather than corrective methods may explain why eight swimmers experienced a recurrence of shoulder pain. This figure may be greater if a follow-up study of the 1994-95 season is done, as a number of swimmers had just completed treatment programmes at the time of this survey.

## CONCLUSIONS

The incidence of shoulder pain in this group of elite swimmers approximates the results of other studies reported.

Physiotherapists were the practitioners most likely to be consulted by the swimmers regarding their shoulder pain. The emphasis in treatment of this condition appears to be on alleviating symptoms, with little consideration given to preventative and curative measures.

Physiotherapists will have to start playing a more meaningful role in the prevention of injury and potential recurrent injury in order to be effective in the management of elite athletes.

It is clear that members of the health team who are involved in the care of swimmers with shoulder pain should be familiar with the stroke mechanics and training methods employed by the swimmers, to ensure that optimal management is provided. Treatment of symptoms only will not permit the swimmer to continue to compete at an elite level.

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