Impact Factor 4.574

Refereed And Indexed Journal

AAYUSHI INTERNATIONAL INTERDISCIPLINARY RESEARCH JOURNAL (AIIRJ)

Monthly Journal



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CHIEF EDITOR – PRAMOD PRAKASHRAO TANDALE

A Pilot Study Examining Shoulder Pain In Elite Level Swimmers

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Abstract

Swimming has become a popular recreational activity as well as a highly competitive sport in India. Shoulder pain is a common as well as orthopaedic problem among competitive swimmers, often limiting their ability to train and compete.

The prevalent aim of the study was to determine the prevalence of interfering shoulder pain in a representative competitive swimmers. The study sought to determine how shoulder pain levels may be influenced by specific training methods used by these swimmers. 110 questionnaire were sent to different IndianUniversity requesting information on training method.

The questionnaire also requested information relating to the presence of shoulder pain both past and present and any 'aggravating' factors perceived by the respondent. A response rate 78% was obtained. The current prevalence of shoulder pain was found to be 25% male swimmers and 18% female swimmers.

Mean, standard deviation and percentage were used to identify the nature, location and cause of shoulder pain prevalence in swimmers.

Those, swimmers training higher distance were more likely to be suffering from shoulder pain. Percentages were used to identify the nature, location and cause of shoulder pain. Percentage of freestyle swimmers, swimming more freestyle pre session were also more likely to have shoulder pain.

Introduction

Swimming has become a popular recreational activity as well as highly competitive sports in the world. Swimming activities have generally been seen to have a low injury potential with impact through the joint being decreased by the buoyancy effects of the water. Indeed most sports injury surveys do not indicate a high incidence of injury in swimming (Mc Master 1993). However, for the elite swimmer, who trains on a regular basis over many years there is a potential for long-term injuries caused by repetitive microtrauma (Kammer et al, 1999). Being a sport which predominately involves the upper limb, it is not surprising that "swimmers shoulder" is the most common of these injuries (Richardson 1980). "Swimmers shoulder" has been described as an overuse injury involving inflammation of the supra spinauts and/or biceps tendon usually caused by glenohumeral instability (Mc Master. Al, Bak et al. 1997) present era.

The demographic data developed in the survey will validate the test group as representative of university swimming. The study will also attempt to assess the effect of specific training method on the development of shoulder pain. This will include meters swum per week, the amount of freestyle swum per session, as well as participation in flexibility and weight training. Finally the survey will attempt to identify factors which the swimmers perceive may aggravate existing shoulder pain such as use of hand paddles.

Methodology

Male and female competitive swimmers who had participated in the inter university level were selected as subject for the study. Their age range between 17 - 25 years. The subject was taken

Aayushi International Interdisciplinary Research Journal (AIIRJ)Vol - VIssue-VMAY2018ISSN 2349-638xImpact Factor 4.574

from different university. Data was collected individually through a questionnaire from 110 swimmers. Some questionnaires received by the researcher through post and some by the contacting swimmers personally. The instruction given to the players before filling these questionnaires by the swimming coach, swimming experts and in some cases by the researcher. The questionnaire included an introductory statement, requesting the swimmers participation, the aim of the study and the fact that all information would remain anonymous the questionnaire. The questionnaire itself comprised six sections. The first required demographic information including current age, sex, standard age of entry into swimming, educational qualification and their main event. The second section concentrated on swim training, information, including hours and meters swum per week, the average length of warm up used and an estimate of the percentage of freestyle swum per session. The third section looked at 'land' training techniques including weight and flexibility training. For each of these the individual was asked whether they participated in such activities, the duration per week and the age at which they began. The fourth section included questions on shoulder pain. The first question was whether the swimmer was currently experiencing shoulder pain. The next asked whether the swimmer had experienced pain at anytime during his/her career. The fifth section shoulder pain when was sustain including cool down, training, and competition. The sixth section recommendation of treatment including doctor, physiotherapist, sports masseur and other. Finally, the swimmer was asked in which shoulder the pain occurred and whether they had ever missed a session due to shoulder pain. If the swimmer was found to have shoulder pain currently or at any time in their career, they were then instructed to progress to final section which asked for possible aggravating factors previously implicated in the literature. These included stretching, the use of hand paddles, kicking with a board, weight training, using swim bench or stretch cords and increasing training distances.

Results

Response Rate:

A total of 110 questionnaires were sent to different university, and 85 were returned and screening, giving an overall response of 78% where 25% male swimmers and 17% female swimmer was found of shoulder pain.

Age and Gender:

The age range of the swimmer was 17 to 25 years. The mean age was 21.33 years in total 66% of respondents were male and 34% were female.

Standard and Main Event:

In total 85 respondent were university level players. The distribution of swimmers main event was freestyle and freestyle stroke was the most frequently occurring shoulder pain.

The freestyle was recorded 26.53% of pain, back stroke was recorded 25.51% of pain, breast stroke was recorder 9.18% butterfly was recorder 16.32% of pain, and individual medley swimmers made up 22% of pain.

Swim Training Profiles:

The swimmers stated that they were performing 6000 male and 3500 females meter per week, the over all total 74%. As expected the male swimmers were performing more meterage per week.

Land Training Profiles:

In terms of weight training 22% of the both group swimmers indicated that they took part in such exercise these swimmers averaged 2.5 hours per week. In comparison 75% of the male swimmers perform weight training, averaging 3.5 hours per week. In terms of flexibility training 58% of the both group swimmers indicated that they took part in such exercise.

The prevalence of shoulder pain:

The prevalence of shoulder pain in the sample of swimmers was 43% more specifically, of the male swimmers 25% were currently suffering from shoulder pain, and 18% of the female swimmers reported shoulder pain. 26% of subject reported shoulder pain in the month of August and 21% in the month of October, minimum per cent of shoulder pain was reported in the month of Feb. It was found that most of the pains were sustained during training (64%) and (36%) of pain reported during competition.

It was found that pain in right shoulder was 58% and left shoulder was 42%, the percentage of play affected due to pain was 8% competitive swimmers, and 92% of competitive swimmer not affected by their playing due to pain, 28% of swimmer sustained shoulder pain in free style event, 25% in Butterfly was recorder, 56% of competitive swimmers treatment took by the Doctor and 26% was physiotherapist.

University level swimmer missed training time also has their study and financial implication. The study also found no association between weight training and shoulder pain or flexibility training and shoulder pain. This is despite the fact that of those swimmers surveyed most were performing in excess of two hours per week on each of the activities. The study has identified that those athletes high weekly training volumes and/or those swimming a high percentage of free style each session are more likely to suffer from interfering shoulder pain.

In terms of using hand paddles during training it has been suggested that these training aids increase the torque forces produced at the shoulder and may thus influence the pain producing potential of the stroke biomechanics. In terms of weight training it is also likely that placing extra stress on the shoulder pain joint may again provoke pain in the already susceptible shoulder. 48% of swimmers perceived shoulder pain an increase in distance it also seems likely that fatigue may be a condition to avoid for the swimmers with existing shoulder pain.

Statistical Analysis:

Mean, standard deviation and percentage were use to identify the nature, location and cause of examining shoulder pain in elite level swimmers.

Discussion:

Results show that the sample used in the study was representative examining shoulder pain in elite level swimmers. All swimmers were university level swimmers, and their training profiles their training profiles were closely matched to that set out in the appropriate coaching literature.

Swimmers surveyed 64% were currently suffering from shoulder pain during training session.

As expected the result of this study suggest that shoulder pain is a serious problem for university level swimmers. As well as the personal discomfort to the athletes, this shoulder pain interferes with training sessions and therefore ability to complete effectively. Indeed a total of 38% of swimmers surveyed reported that the had missed at least one training session due to shoulder pain. Finally, almost 48% of swimmers received that kicking with a boad would aggravate their shoulder pain.

Conclusion

This study established that interfering shoulder pain is likely to be present in a substantial number of elite level swimmers, this includes male and female swimmers. The overall figure for current shoulder pain was 43% this includes 25% of the male swimmers and 18% of the female swimmers.

The study also established that a larger number of male swimmers will have suffered from interfering shoulder pain at some paint in their swimming career. The survey also found that 38% of those swimmers surveyed had been forced to miss a least one training session due to shoulder pain. The study showed that maximum pain occurred during training, regarding treatment of pain doctors and physiotherapist are the most common attention provider of shoulder pain of elite level swimmers.

The results it can be also concluded that those swimmers performing a higher percentage of freestyle per session were more likely to be suffering from shoulder pain.

It was also found that a number of factors were identified by the swimmers surveyed as aggravating existing shoulder pain. Four factors in particular were identified, as being particularly problematic, weight training, using hand paddles, and an increase in training distance.

Finally this study show that shoulder pain the serious problem for selected elite level swimmers as well as the personal discomfort to the swimmers.

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