

# Awareness among School Athletes about “The Handling and Transferring Techniques of a Suspected Spinal Cord Injured Athlete”

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## Abstract

**Background:** Traumatic Spinal Cord Injury (SCI) among athletes frequently associated with temporary or permanent sensory and/or motor function loss below the level of lesion. This carries high morbidity which may limit the day to day activities. Awareness of proper techniques in early management of a spinal cord injured patients may limit complications. The main objective of this study is to evaluate the awareness about proper handling and transferring techniques of patient with a SCI among school athletes.

**Methods:** Self-administered questionnaires with questions related to handling and transferring techniques of patient with a SCI were randomly distributed among school athletes (12-20 years) in Kandy (Sri Lanka) educational zone. Single total score representing the level of awareness was scored after evaluating the answers. These scores were then compared using Mann Whitney and Kruskal-Wallis to explore the awareness.

**Results:** Among 243 of school athletes (Male, 50.2%; Female, 49.2%), Age: median=15, IQR=1) interviewed, overall mean awareness level score was 50.8% (17.9 ± SD).

**Conclusion:** The awareness of proper handling of SCI patient did not differ in relation to gender, age, level of engagement in sports. Although overall awareness level of the questions based on handling and transferring techniques was moderate, there was an inadequate level of awareness regarding the handling of some important emergency situations.

**Keywords:** Spinal cord injury; Awareness; First aid; Handling and transferring; School; Athlete; Sport injuries

## Introduction

Traumatic Spinal Cord Injury (SCI) is a trauma to the spinal cord and cauda-equina, resulting in temporary or permanent sensory and/or motor function loss below the level of lesion. Road traffic accidents, falls from heights and violence are common causes of SCI [1]. Sport injuries including diving into shallow water, collapse of a rugby scrum [2] should not be neglected during the risk assessment. Even though spinal cord injury related sport is less common, still it carries a morbidity which limits the day today activities of an athlete [3].

Proper techniques in handling and transferring of the spinal cord injured patient immediately after the trauma may prevent further neurological damage and resulting complications. As management of SCI should begin at the site of the injury, awareness of proper techniques of acute management would avoid the complications in injured patients [2]. Furthermore, increasing awareness should be focused as a preventive strategy to reduce the burden to the health resources [4].

Effective implementation of primary prevention strategies requires a considerable awareness level of proper handling and techniques at the injury site. Most commonly athletes start their sports career at school levels. Therefore, raising the awareness at school level is important and readily implemented. To date, level of awareness among school athletes had not been evaluated specially in developing countries. In this study, we aimed to evaluate the awareness about proper handling and transferring techniques of patients with SCI among school athletes.

## Materials and Methods

This is a cross-sectional study. List of national schools and formal approval for data collection at these schools were obtained from Zonal Educational Department, Kandy, Sri Lanka. Ten schools were selected randomly. Approval to conduct the study at each school was also obtained from the head of the institution. This study was approved

by Ethics Review Committee, Faculty of Medicine, University of Peradeniya (2012/EC/38).

Self-administered questionnaires consisting of questions related to proper handling and transferring techniques of a spinal cord injured athlete were randomly distributed among 243 school athletes of 10 national schools (Appendix 1). Questions were prepared referring to the guidelines of recognised professional bodies [2,5,6]. General initial steps such as proper maintenance of stability of the neck/head and body, turning, lifting, and transferring of the patient were interviewed during the study. Other safety techniques that should be considered during the event (sports) in the field as injuries while wearing a helmet, while the players in water etc. were also questioned.

Single total score representing the level of awareness, was given after evaluating the answers given by each student for questions from 10-22 in the questionnaire (Appendix 1). These score were compared according to the gender, age, level of engagement and duration of engaged period in sports. The categorical variables were summarised using percentage (%) while continuous variables were summarised using median with IQR and mean (± standard deviation) where appropriate. Mann Whitney test and Kruskal-Walli test were used to compare different variables since most variables were non-normally distributed.

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## Results and Discussion

Among 243 athletes interviewed (female 49.8%; male 50.2%), most student athletes (Figure 1) had different engagement levels ranging from inter-house level to international level. The engaging time period ranged from less than one year to more than 10 years (median 4, IQR-3).

When considering about the proportions of the scores (awareness), majority of the students (43.6%) scored 41-60. The percentage of students who have scored 20-41 was almost similar to that of students scored 61-80 (26.7% and 23.4% respectively). In contrast, only a few students (0.4%) scored over 80 (Figure 2).

Based on non-parametric analysis, there was no significant relation between the awareness (score) and gender, age groups categorized

according to the classification of sections in Sri Lankan schools (below Ordinary Level (O/L) (Grade 8-9), O/L (Grade 10-11) and Advanced Level (A/L) (Grade 12-13)), level of engagement (inter house, zonal, divisional, district, provincial, national and international) etc. However, there was a significant difference ( $p < 0.019$ ) in awareness with the experience in the sports field (less than one year, 1-5 years and 5-10 years).

Among the questions tested, 6 out of 13 questions were responded accurately by approximately 50% subjects while another 4 questions were answered correctly by more than 75% participants. However, the 3 specific questions prepared to assess the awareness level specific to athletic injuries were answered correctly by less than 20% of the participants (Figure 3). All these questions were included to address the important aspects of managing SCI, such as whether they were

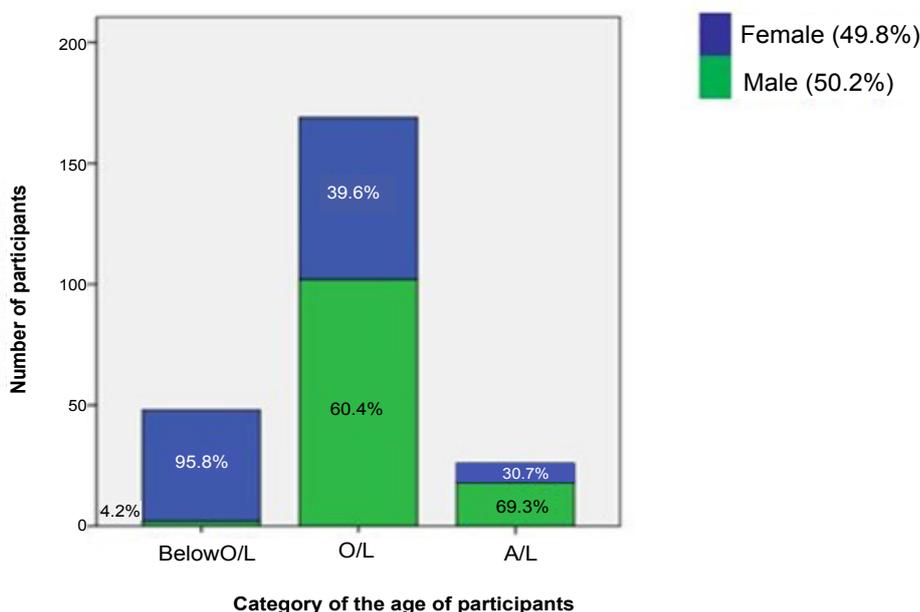


Figure 1: Sample distribution (Age of the participant; below O/L (Grade 8-9), O/L (Grade 10-11), and A/L (Grade 12-13)).

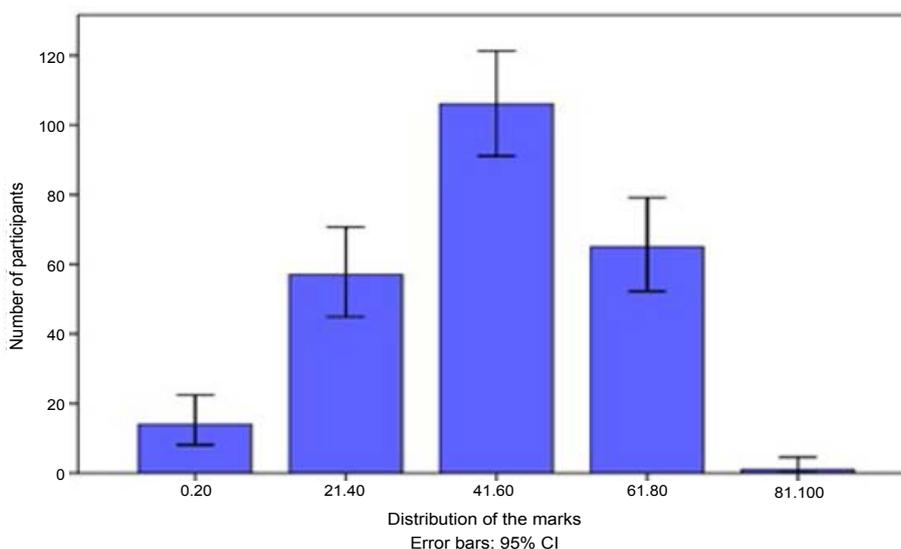
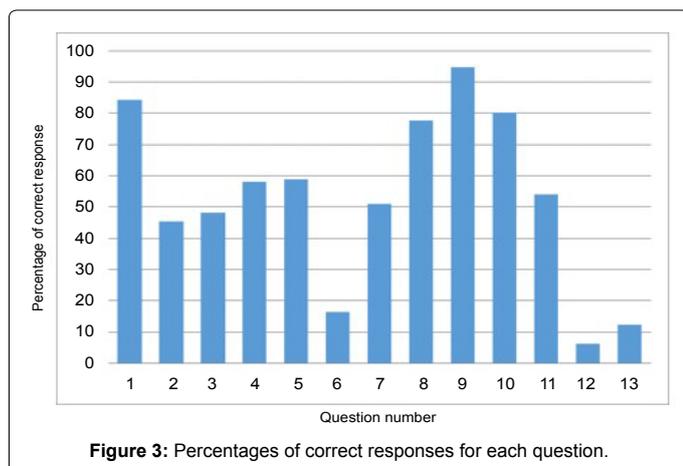


Figure 2: Distribution of the total score among participants.



aware that they should not shake the injured patient unnecessarily and they should not send the patient back to the game. As stated earlier, over 75% of the respondents were aware of the correct procedure i.e. they knew that the patient should be transferred on a rigid board and have to send the patient immediately to the nearest hospital. In addition, 50% of the study participants were aware that they should not turn the patient to a side, should not allow patient to take water and should not lift the patient without proper support to head, neck and body. They were also aware that they should turn the patient supine and have to immobilize neck, head and body using appropriate materials. According to the findings, only 20% were aware that they should not lift the patient as on the same posture when he/she was injured, should not remove the helmet if the patient is wearing a helmet (unless there is a need to perform Cardio Pulmonary Resuscitation), and they should not try to move the patient to the land if the player is in the water (if help arrives within 5-10 min).

Post evaluation of a lecture program targeting both primary and secondary schools conducted among 27 schools in Australia reported that they had higher levels of knowledge on the structure of the spinal cord and effects of injury [7]. Correct responses given for general knowledge questions regarding spinal cord injuries as a pre and post school visit program in Canada, ranged in between 14.7%-77.6% showing that the knowledge is considerably low [8]. Less awareness was reported in Schottler's study [9] to measure the awareness among patients and caregivers regarding spinal cord severity [9]. However, there were no studies to evaluate the knowledge on handling and transferring techniques among school athletes.

A previous Sri Lankan study has shown that 10% of spinal injuries are due to sports [10]. However, there was inadequate awareness regarding anatomy of spinal cord injuries, aetiology and clinical features of SCIs among school athletes in Kandy educational zone, Sri Lanka [11]. Results of the present study add that the school athletes in the same study area were having moderate awareness regarding the handling and transferring techniques of a person with a spinal cord injury. Poor level of awareness on specific techniques which have to be practiced in handling and transferring a patient with suspected spinal cord injury should be highlighted.

It was also found that, 94.7% (n=230) of the participants were willing to update and improve their knowledge regarding the correct techniques in handling and transferring of a suspected spinal cord injured person. This is a positive trend and it is up to the education

policy makers and the administration to implement such awareness programmes. Best method to disseminate the knowledge to the target school athletes were identified as through the sport coach (67.5%), workshops (62.9%) and schools (41.7%) respectively.

Effective implementation of primary prevention strategies, require a considerable awareness level of proper handling and techniques at the injury site. Lack of awareness about emergency field-side care and management steps of a patient with a spinal cord injury can cause more harm to the patient. Therefore, enhancing the awareness among the general population including the risk groups, regarding spinal cord injuries and safe transport and handling techniques is vital to avoid further complications.

Further studies among a wider population including identified high risk groups of SCI, should be conducted on the same topic. Results of the study can be utilized to assess the need of programmes to raise the awareness of the school athletes and other high risk groups. Since data collection, analysis and interpretation play an important role in developing strategies for prevention of injuries [12], primary data collection on awareness level on acute management of SCI can be further extended as a larger study. In designing further studies, government and non-government organizations can use these data to implement community awareness programmes and campaigns to raise the awareness among the risk groups for spinal cord injury.

## Conclusion

Overall awareness level regarding general handling and transferring techniques was moderate. However, the results also revealed that there was an inadequate level of awareness regarding the handling of some emergency situations, specifically those may happen in the sports field. Further studies among a wider population should be conducted, specially targeting the identified high risk groups of SCI. Results of the study can be utilized to assess the need of programmes such as campaigns to raise the awareness of the school athletes and other high risk groups.

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