

Assessment of the existing rehabilitation protocol relative to the International standard protocol for knee soft tissue injuries among school level rugby players in the Kandy zone

Thusharika D. Dissanayaka¹, S. Arambamoorthy¹, N. Aravinth¹, Nuwan T. Atapattu¹, Aruna S. Bandara¹, Dinusha L. De Silva¹, Udani N. Fernando¹, Sukitha K. Herath¹, Asela J.B. Rathnayaka² and Mark I. Johnson³

¹Department of Physiotherapy, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka

²Sports Physician, Teaching Hospital, Peradeniya, Sri Lanka

³Centre for Pain Research, Faculty of Health, Leeds Metropolitan University, UK, Leeds Pallium Research Group

Abstract- Objective: To assess the existing rehabilitation protocol relative to the international standard protocol for knee soft tissue injuries among school level rugby players in Kandy zone. **Design, setting and sample:** A retrospective whole population survey was conducted among division A and B, 45 school level male rugby players (Under 17 and 19) who had undergone knee soft tissue injuries in the Kandy zone, Sri Lanka. **Measurements:** A self-administered questionnaire which contained 21 close ended (Yes/No) questions on acute, rehabilitation and training stages which prepared according to the international standard rehabilitation protocol developed by human kinetics organization. **Results:** According to the responses obtained from the self-administered questionnaire; 24.4 % followed the rehabilitation stage, 4.4 % followed the training stage and none of the players followed the acute stage of the rehabilitation process. Even though the players were not following all the five components of acute stage accurately, they have followed each component separately, such as protection (75%), rest (57%), ice (37%), compression (60%) and elevation (8%). Approximately 71% of players were engaged in stretching and 62% in endurance training in the rehabilitation stage. However majority of players (77%) got back to their sport before getting proper recovery. The study revealed that 24.44% of knee injured players were props in their teams. 40% of these players have got recurrent injuries in their histories. The study identified that the percentage of availability of sport physician and physiotherapists to be 35.55% and zero respectively. This indicated that the entire rehabilitation process is not being implemented among Kandy zone school level rugby players. **Conclusion:** In conclusion, the results of this study showed that, the implementation of the rehabilitation protocol in the Kandy zone, Sri Lanka is not up to international standard. Therefore, an internationally standard rehabilitation protocol should be adapted by the Kandy zone school level rugby players in Sri Lanka

Index Terms- Knee; Rugby; Rehabilitation; Soft tissue injuries

I. INTRODUCTION

Rugby is a popular, contact sport among all the team sports with high incidence of injuries which impose both psychological and physiological stress on the player [1, 2]. In this game players are required to demonstrate speed, stamina, strength and agility [3]. The major location of injuries occur during rugby is lower limb (60%) due to major weight bearing area of the body and the most common diagnosis is musculoskeletal injuries which are muscle and tendon (50%) and joint (non-bone) and ligament (41%) injuries [1, 4, 5]. In the lower limb, knee is the common site which causes serious issues on players among 16-25 years old [6, 7]. Majority of these injuries result from the contact phase, with the main cause of being tackle [8].

School sports are also not risk free and it is the largest contributing factor to injuries at school [9, 10]. These injuries are most commonly occurred in rugby (43%) [9]. A high level player with a major knee injury has a high incidence of knee osteoarthritis, because defect in articular cartilage have limited ability to heal and may progress to osteoarthritis [11]. In addition to that, it may prevent the injured person from playing rugby or other sports. Thus, it may cause economic, social, physical and psychological problems to the player.

Therefore, after an injury, it is essential for the injured player to gain normal functional level. This is the main goal of rehabilitation. Hence, it is necessary to eliminate pain and reestablish range of motion, technique, and coordination, while at the same time avoiding the loss of muscle strength and endurance, during the period that the athlete cannot train to the maximum capacity [12].

The existing internationally recognized protocol is established by the Human Kinetic Network which is the largest international research based forum on sport medicine. According to them, there are certain elements to be done during the different phases of Rehabilitation. Rehabilitation can be divided into three stages;

- Acute stage - lasts a few days to weeks.
- Rehabilitation stage – lasts from weeks to months.
- Training stage – lasts a few weeks to months.

These stages often overlap. What determines when an athlete will pass from one stage to another is not the time that has elapsed but the progress the patient has made.

In the acute stage, it is essential to begin the effective PRICE principle as soon as possible. Here, "P" stands for Protection, "R" for Rest, "I" for Ice, "C" for Compression and "E" for Elevation. The goal of the protection and rest is to avoid further injury and reduce the blood supply to injured area which has a high blood flow during the activity. In rehabilitation stage, the main goal is to prepare the athlete to train normally and the main considerations here are pain and swelling. That is, it is necessary to ensure: normal range of motion, normal strength, normal neuromuscular function and normal aerobic capacity.

The goal of the training stage is to ensure that the athlete regains his normal ability to perform in the sports, to tolerate the loading that is unavoidable in competition, and to tolerate normal amounts of training before being allowed to complete again.

In considering standard protocol for soft tissue injury management which has developed by Human Kinetic Organization, the protocol used in Sri Lanka might be different from the standard. Therefore, it is necessary to have an idea about this protocol. However, research on rugby is extremely limited in Sri Lanka. The purpose of this study was therefore, to assess the rehabilitation protocol practiced in soft tissue injuries in rugby specified to knee in the Kandy zone.

II. METHOD

Data of this retrospective survey for assessment of the existing rehabilitation protocol relative to the International standard protocol for knee soft tissue injuries among school level male rugby players in the age groups of under 17 and 19 years in the Kandy zone was collected via a self-administered questionnaire. Items in the questionnaire pertaining to injury management were prepared according to the international standard protocol for soft tissue injury management developed by the Human Kinetic Organization [12]. Ethics approval for this survey was granted by the ethical committee of the Faculty of Allied Health Sciences, University of Peradeniya.

The questionnaire was categorized into three parts, such as part A, B and C. Additional items detailing age, gender, school and matches which were missed due to injury were included into part A and C. Part B consisted of questions that were related to acute stage, rehabilitation stage and training stage. Acute stage management was assessed by correctly identifying application of PRICE principle. Rehabilitation and training stages were by evaluating if the players follow the required steps according to the standard protocol. There were one or two optional questions in each stage of part B, which were not accounted in evaluation, if they were failed to respond due to economic and social problems. Majority of the questions were close ended. Also, there were few open ended questions. A draft version of the questionnaire was administered to ten school Rugby players known to the authors to refine the final instrument.

Players were recruited from 7 schools with the assistance of the local rugby football union administrators. In November 2010, research team members visited schools which were eligible for the study. Each player was given information about the project and invited to participate. Those who were chosen to do so were required to provide written informed consent and complete the questionnaire anonymously. The questionnaire was self-administered, with physiotherapists (research team) available to answer questions and assist where necessary. All the data was collected from October to November. Each subject was given a questionnaire to fill within the given time. They were asked to put an 'x' mark in the relevant boxes.

Statistical Analysis

Collected data from the questionnaire was entered into the computer database for analysis. Each stage was composed of 5 questions and the three stages of the rehabilitation program were separately evaluated by taking the proportion of followed standard protocol.

III. RESULT

Data were analyzed using Minitab statistical software. During the follow up period, 45 school level knee injured rugby players were recorded. Seven schools of the Kandy zone were involved in the study. As two schools didn't have rugby in their school and one school didn't have any players with knee injuries, data was collected from 7 schools. Injury surveillance data was completed for seven schools during the study period. There was a total of 45 players who had knee injuries according to our study.

During the acute stage none of the players were sticking on to the protocol, In contrast, during the rehabilitation stage 24.4% and 4.4% in the training stage were following the protocol (Figure-01).

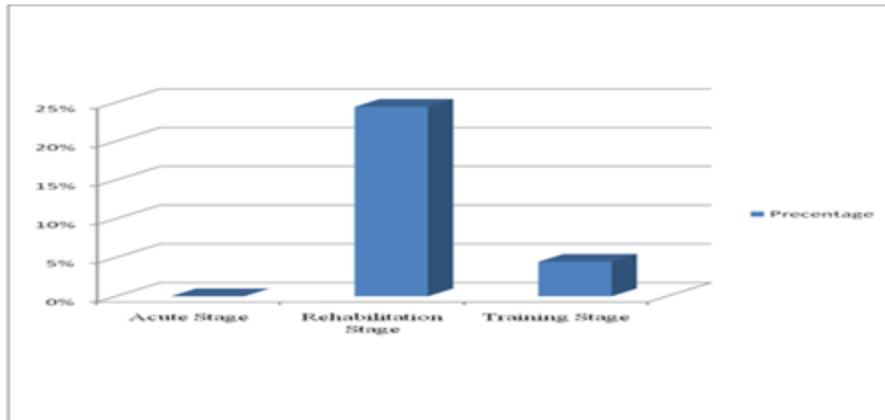


Figure 1: Percentage of Implementation

Even though the players were not following all the five components of acute stage accurately, they have followed each component separately, such as protection (75%), rest (57%), ice (37%), compression (60%) and elevation (8%) (Figure-02). Approximately 71% of players were engaged in stretching and 62% in endurance training in the rehabilitation stage. However majority of players (77%) got back to their sport before getting a proper recovery.

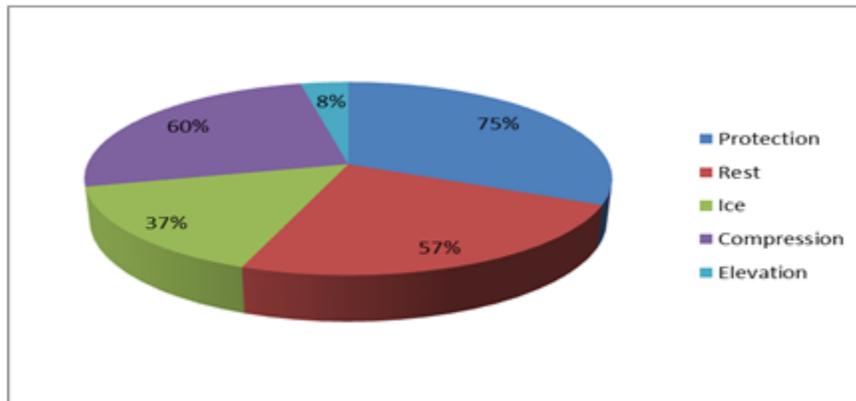


Figure 02: Acute Stage

The study revealed that 24.44% of knee injured players were props in their teams. 40% of these players have got recurrent injuries in their histories (Figure- 03). The study identified that the percentage of availability of sport physician and physiotherapists to be 35.55% and zero respectively. Overall no one was following a satisfactory rehabilitation protocol in Kandy Zone.

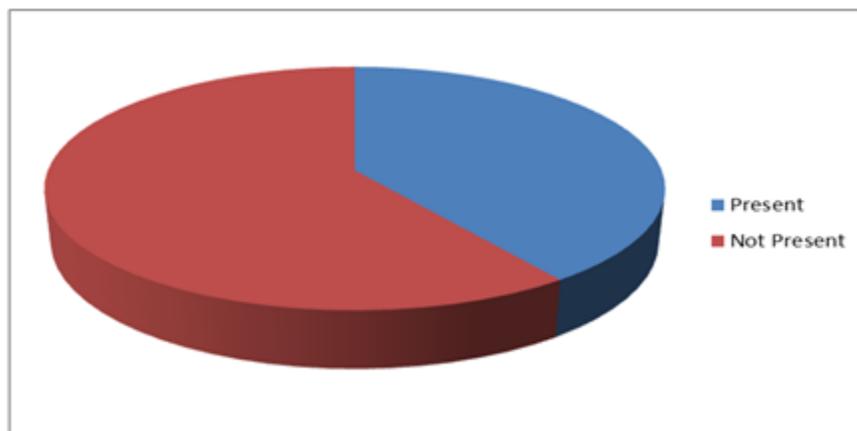


Figure 03: Recurrent Injuries

IV. DISCUSSION

Rehabilitation is defined as “The restoration of and individual part or a part to normal or near normal function after a disabling disease, injury, addiction or incarceration” [13]. Therefore rehabilitation protocols are essential in the sporting field to give relief to the injuries [14]. To the best of our knowledge, this study is the first to assess the existing rehabilitation protocol practiced in Kandy zone relative to the international standard protocol.

This study reports percentage of implementation of overall rehabilitation protocol and its stage from a retrospective cohort survey. The overall percentage of implementation of international rehabilitation protocol observed in this study was zero (0). Here the study concentrated on collection of acute, rehabilitation and training stages’ results. The percentage of implementation of acute stage is zero. This stage consists of five components. Those are protection (P), Rest(R), Ice (I), Compression (C) and elevation (E). All five of them together are known as PRICE principle.

A previous study on pattern and management of sports injuries at national sports festival in Nigeria revealed that cryotherapy and bandaging (form of compression) were the most frequently used treatment modalities during the games. In addition to that, it had concentrated on importance of cryotherapy. It is emphasized that it should be made abundantly available in the form of portable cold spray for easy transportation and application during the game [15]. As the above study was concerned about I-Ice; C-compression and R- rest as other issues of PRICE principle. In addition to that all five components should be fulfilled in equal proportion. Even though they have followed each component separately, the present study is concerned about not only on the usage of each component of PRICE, but also on the correct technique and way of usage of them. The result zero means school level rugby players don’t apply PRICE principle in the accurate and efficient manner after having an injury.

Rehabilitation stage consists of stretching programs, general strength and muscular endurance training programs and FITT (Frequency, Intensity, Time, Type) approach. Percentage of fulfillment of the above all facts is 24.4%.

An earlier study on physical testing prior to returning to normal sports activity has focused on rehabilitation of elite athletes following ACL injuries. According to that, several months are required for a proper rehabilitation; bring back the players to professional sport activity. He has emphasized on end of the rehabilitation programme should include, Isokinetic testing, Functional tests and Stability clinical assessment [16].

Percentage of implementation of training stage in our study is 4%. According to human kinetics, this is the training stage of rehabilitation protocol. This is in agreement with the previous study. Here, application of special shoes, braces, practical tests conducted by physicians or physical therapists and use of proper monitoring techniques for record the training and pain, were considered.

The finding that props got knee injuries much more frequently than players in other positions. It has also been reported that forwards received a larger than expected number of injuries, based on the number of player positions [17]. Prop is a player playing in either of the two forwards position and his responsibilities are to support the hooker during a scrum and the second rows during a lineout. Forwards tend to be involved in more collisions. Then perhaps they should be more susceptible to injuries [3].

The study emphasize on the importance of team work process of health care system to prevent and manage injuries in the sporting field. The team physician and physiotherapists are the essential components in the medical team. The study revealed that physiotherapists play a major role in establishing injury prevention and management routines [15]. Another study informs physical therapists regarding legal consideration impacting the practice of sports physical therapy and refreshing their responsibilities in the sporting field. And also it has tended to generate awareness of these issues to enhance the quality of physical therapy provided to proper injury management.

According to the study, physical therapists are involved in various angles in the field. These include;

- Providing treatment designed to enable continued play with an injury before it is fully healed
- Informing a player of the potential health risks of continued activities in his physical condition
- Evaluating and advising players concerning his or her ability to resume play activity [18].

In the research literature, various individuals and groups have attempted to emphasize the importance of health care team in the sporting field and their responsibilities. But our study included the percentage of availability of sport physician and physiotherapists in our study population.

Establishing injury rehabilitation programs as well as injury prevention program, it is important to have a proper health team and they should be trained to provide a proper management [15]. It is recognized that players are unaware about the rehabilitation protocol, its contents and how to use it properly. Most of the players had poor knowledge regarding rehabilitation protocol and were not informed about it [19].

A variety of protective and supportive devices such as braces, special shoes are designed to prevent or reduce the severity of knee injuries by absorbing the valgus producing forces [20]. The study identified that poor knowledge regarding those appliances and high cost of special external appliances such as special shoes; fitted braces keep the players from the using of them. Because of that players tend to avoid using special safety appliances which are useful and beneficial in relieving the extra force from the injury site. There are several limitations of this work which merit attention. During the course of this study two schools were excluded as they didn’t have a rugby team (Mahanama College and Kahalla Kanishta Vidyalaya). But they were included in the statistics of education department and there were no knee injured players in Vidyartha College.

Knowing proper rehabilitation protocols will be beneficial for players, to focus on the proper rehabilitation after getting an injury, to regain their pre injury level of fitness and also to improve the contents and quality of the existing rehabilitation protocol in Sri Lanka.

And also health care professionals and authority members can get a clear idea regarding the standards of a rehabilitation protocol. It is essential that the governing bodies of rugby, together with team coaches and health care professionals, have a complete understanding of the incidence, causes, treatment and rehabilitation strategies of sport injuries [1]. Our study results give a clear idea to the health care professionals and authority members regarding the standard of rehabilitation protocol. There is a need for improvement in training for sport rehabilitation. A qualified sport medicine team needs to be an integral part of all rugby programs.

V. CONCLUSION

In health care profession, Injury management and rehabilitation can be added as a component inside the curriculum of courses such as physiotherapy, sports medicine and exercise sciences. By improving awareness regarding these issues, barriers to performances of players will be reduced. It is essential to appoint and maintain a physiotherapist per team and the importance should be emphasized to them. And also have to correct the improperly acting techniques currently. From this study, we can get an idea about overall injury rehabilitation in Kandy zone. By knowing proper rehabilitation techniques from the beginning, the players can reduce the time loss or medical seeking after injury. So players can play the game without missing matches and refraining from the game. Similar kind of studies can be done all over the country for every sport to analyze the standard of the rehabilitation in sports in Sri Lanka.

ACKNOWLEDGMENT

We would like to thank Principles of the Kandy zone schools and the staff of the Department of Physiotherapy, Faculty of Allied Health Sciences, University of Peradeniya for their immense encouragement and support.

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AUTHORS

First Author: Thusharika Dilrukshi Dissanayaka, BSc in Physiotherapy, Dip in Exercise & sport science, University of Peradeniya, Sri Lanaka, Email id - thushfhs@yahoo.com

Second Author: S. Arbamoorthy, BSc in Physiotherapy, Dip in Exercise & sport science, University of Peradeniya, Sri Lanaka, Email id - vakeephy@yahoo.com

Third Author: N. Arvinth, BSc in Physiotherapy, Dip in Exercise & sport science, University of Peradeniya, Sri Lanaka, Email id - arvind122333@yahoo.com

- Fourth Author:** Nuwan T. Athapaththu, BSc in Physiotherapy, Dip in Exercise & sport science, University of Peradeniya, Sri Lanaka, Email id - nwatapattu@yahoo.com
- Fifth Author:** Aruna S. Bandara, BSc in Physiotherapy, Dip in Exercise & sport science, University of Peradeniya, Sri Lanaka, Email id - arunsbandara@gmail.com
- Sixth Author:** DinushaL. De Silva, BSc in Physiotherapy, Dip in Exercise & sport science, University of Peradeniya, Sri Lanaka, Email id - dinushaphysio@gmail.com
- Seventh Author:** Udani n. Fernando, BSc in Physiotherapy, University of Peradeniya, Sri Lanaka, udani. Email id - fernando1985@gmail.com
- Eighth Author:** Sukitha Kumari Herath, BSc in Physiotherapy, Dip in Exercise & sport science, University of Peradeniya, Sri Lanaka, Email id - hmisukitha@gmail.com
- Ninth Author:** Asela J. B. Rathnayaka, Sports Physician, Teaching Hospital, Peradeniya, Sri Lanaka, Email id - aselajbr1974@yahoo.com
- Tenth Author:** Mark I. Johnson, PhD, Professor in Pain and Analgesia, Centre for Pain Research Faculty of Health, Leeds Metropolitan University, Civic Quarter, Leeds LS1 3HE, UK, Email id - m.johnson@leedsmet.ac.uk
- Correspondance:** Thusharika D. Dissanayaka, Department of Physiotherapy, Faculty of Allied Health Sciences, University of Peradeniya, Email id - thushfhs@yahoo.com, Telephone: 0716305852/0783891568