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Effect of rehabilitation programme on injured inter-collegiate men volley-ball players

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Abstract

Injuries are common in sports and games. Muscle, joints, skin, bones, tissues and nerves get injuries frequently. Injuries like sprain, strain, fractures and dislocations shall be handled properly lest the player becomes disabled. Immediate and proper treatment and speedy recovery helps a player to regain his form. This can be enhanced through a constructive rehabilitation programme which consists of various therapeutics like exercises and yogic asana which shall continue till recovery. There are several kinds of therapeutics, passive, active, assisted and resisted exercises and massages adopted in rehabilitation. The rehabilitation programme shall be conducted systematically under the supervision of a trainer or therapist.

Keywords: Sports injuries, rehabilitation, therapeutics, yogic exercises and massage

1. Introduction

Every tactical move in volleyball, one depends upon team work and the individual skills such as passing, setting, spiking, jumping, controlling the ball, participation and speed to the ball and keeping the eyes on the ball. Tactics will succeed only through individual fundamental skills and with players thinking as a team. (Men's Volleyball; 1974)^[3].

Injuries are common phenomenon in games and sports. It is a regular feature among the Volleyball players during their sports career. Injuries are related to muscle, joints, skin, bones, tissues and nerves. If injuries like sprain, strain, fractures, dislocations etc. are not properly managed, the player becomes disabled. Appropriate and immediate treatment should be provided to the injured player for solid comeback to the sports arena. Proper treatment and speedy recovery is essential for a player to regain original form. This can be possible through an effective rehabilitation programme. Rehabilitation is a process through which the functioning of injured player is restored to his full potential. It consists of various therapeutic modalities like exercises, and practice of yogic asanas which are executed immediately after injury and continued till full recovery.

1.1 Therapeutic Exercises

Among all the therapeutic modalities exercises play a vital role in the treatment of injuries. Therapeutic exercise is defined as a set of physical movements to restore specific functions of a person suffering from physical disorders. Therapeutic exercises have occupied prominent place not only in surgical rehabilitation but in the prevention and care of musculoskeletal trauma. Many trainers opt for them in the first place. The objectives are to rehabilitate the injured back to normal activity in the shortest possible time. During a rigorous Volley-ball match injury may happen inspite of the precautionary measures taken by player. Muscle pull, dislocation, sprain and ligament injuries are common during Volley-ball match. Injured players affective the performance of the team. So rehabilitation programme is very crucial to injured players. Passive movements are performed by the therapist or a physician. The patient asked to be in a relaxed position. The purpose of such movement is to regain the mobility in the joint by preventing adhesion formation. Such movements are generally carried out in those cases where an active and full motion causes pain and discomfort. Active movements are performed entirely by the injured player but under the supervision of the therapist. Active movements should be individually planned for each player according to his selected skills.

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Assisted movement is generally used when the injured player is unable to perform the free movement or to withstand any resistance. Assistance can be given by the therapist with the help of the pulley and sling or by self assistance or by other persons or by immersion in water. Swimming pool activity is generally included for injuries of the legs or arms. It offers much versatility. Resisted exercises are those exercises which are performed against some external resistance. This can be done with the help of some weights, springs, bands, rope or manual resistance.

Research has shown that resisted exercises are most potent to develop the strength of weak joints and muscles and thus play an important role in rehabilitation. There are four types of resisted exercises: Isotonic, Isometric, Eccentric and Iso kinetic. Isotonic training involves the use of progressive and resistive exercises. Weights are generally used and the player moves through a full range of motion from extension to flexion of affected arms and legs. Isometric exercises have become recently popular in rehabilitation. The advantage is that they can be used at an early stage after injury.

Eccentric training or "negative movement" is that part of the isotonic programme in which the weight is held back against the force of gravity. Eccentric movement produces lengthening and contraction of muscles. Scientific studies reveal that negative exercises have little effect on the cardiovascular system. Different research evidence points to the fact that negative contraction rather than positive contraction can provide much faster strength-gain in the post

surgery situation. Isokinetic exercises are known as a system of accommodating resistance. It allows movement in a mechanical way at a fixed rate of speed. Researches studies have shown that isokinetic exercises have produced better results in the development of isometric or isotonic training. However, the exercises cannot be performed with an apparatus.

While designing and developing an exercise programme it is important to take in to consideration of the need and capacity of the injured player. Some important therapeutic exercises are given briefly in this paper. Free hand exercises may be performed to regain the original strength of injured body parts through repeated free hand exercises. Here contraction and relaxation of muscles take place in a systematic way. Stretching exercises are highly essential for long heavy muscles. In the case of sprain, strain or cramp in the muscle group light stretching type of exercises have been proved to be successful. Locomotive exercises are useful for joints and ligaments. After sprain dislocation and disorder in the-joints, locomotive type of exercises like circumduction, extension and flexion near the joints are necessary to add strength to the injured area. Yogic exercises are simple but effective methods in rehabilitation programme. Yogic exercises include selected asanas and pranayama programme to restore the strength, vigor and concentration in the injured players. Regular practice of yogic asanas like Salabhasan is useful to volleyball players.



Fig 1: Free hand exercise



Fig 2: Stretching exercise



Fig 3: Locomotive exercise



Fig 4: Yogic exercises

1.2 Therapy

Therapy will play a vital role in rehabilitation programme as far as injured player is concerned. It will give fast relief to injured player and he will come back his original form. That is the reason; author described here various kinds of therapies. In cryo therapy application the use of ice in combination with exercise has become an accepted method of therapy for injured football players. 10 to 30 minutes of ice application is effective. Ice massage is suitable for flatter areas of the body. A light circular or back and forth motion is used with the application and carried out circumferentially from the affected area. In this process ice is chipped or crushed in a towel and attached with a tape or band. The injury should be treated at least thrice a day.

Injured players opt thermo therapy application to recover from injuries to come back to playing arena. Every training room should have moist heat pack equipments (rubber bag, Formulation etc.) because it is the simplest and most economical way to apply moist for the relief of pain and muscle spasm. In this case heat penetration is effective in comparison with infra-red heat. A 20 to 30 minutes treatment twice daily is sufficient during application of hot packs. Infra-red heat treatment is an efficient and easily operated therapeutic agent. It can be easily applied and transported. It is applied to local area to create heat in stimulating the

circulation of blood within that area. It can be for applied for 15 to 20 minutes and it is suitable when the injury is superficial and where deep heat penetration is not required. Ultra sound: is used to penetrate heat deep to the injured area. An ultra sound generator Produces vibration having frequency between 700,000 and 1000,000 cycles per second which may penetrate as much as 6 cm. into the body tissues. It has been found beneficial in the case sprains, strains and contusion. Massage is used primarily to promote return flow of blood and lymph to the heart, thus relieving local swelling. There are four basic techniques of massage i.e. stroking, kneading, friction and percussion. Finally it can be said that in view of the aspirations of the player proper rehabilitation is imperative.

2. Review of Literature

Mörl F *et al.* (2011) [4] evaluated the effect of various training methods in physiotherapy on pain relief and change in proprioception and kinesthesia of the shoulder. Further, the connections between pain relief and change in motor function of the shoulder were investigated. Two groups of unspecific shoulder pain patients (group1 n = 12, group2 n = 10). One group (n = 8) of non-symptomatic subjects. The first shoulder-pain group was trained using flexible foil, whilst flexible bands were used to train the patients in the

second group. Training period was 12 weeks. Pain of the shoulder was evaluated through functional pain assessment (Constant-Murley score) before, halfway through and after intervention. Proprioceptive and kinesthetic ability was measured by an active-active angle-replication test for the shoulder before and after intervention. The data of the shoulder patients was compared to the group of non-symptomatic subjects. Pain was reduced significantly in both groups ($p < .05$) whereas no changes were measured for the ability to replicate angles of the shoulder. This suggests that pain relief in the shoulder is not associated with enhancement of the investigated parameters in motor function.

Cappellino F, *et al.* (2011) [5] tested a neurocognitive rehabilitative approach based on proprioceptive exercises and proper motor strategy choices, compared with conventional rehabilitation, assessing baropodometric, gait and clinical changes. Fourteen subjects (27.9 ± 5.2 years) underwent a surgical reconstruction of ACL were divided into the two groups. The subjects were randomly assigned into a group who received a specific neurocognitive and perceptive rehabilitation treatment (TG), and into a control group who received the common physical therapy (CG). The following outcome measures were assessed pre-intervention, one, three and six months later: static and dynamic baropodometry, Visual Analog Scale for pain, Short Form SF-36, Range of Motion, trophism of thigh region, edema, Manual Muscle Test, magneto-resonance imaging assessment. Lower impairment was observed in TG in respect of CG in terms of load asymmetry during static baropodometry (from 7% to 3% vs. from 10% to 7%, interaction time per treatment: $P=0.037$), less wide steps during gait (effect size=1.05 vs. 0.38 for CG),

swelling (treatment effect: $P=0.012$). A significantly higher improvement (from 35% to 100%) in terms of SF-36 was recorded only in TG for physical activity ($P=0.027$). CG showed a quite higher walking speed (treatment effect: $P=0.049$). Even if further studies are needed on larger samples, the obtained results showed that a neurocognitive rehabilitative approach could be an effective treatment after ACL-reconstruction: in TG they observed a more rapid load symmetrization, the reduction of step width and a more rapid resolution of edema.

3. Methodology

30 Injured men Volley-ball players of aged 18-21 of various Engineering Colleges of Visakhapatnam District affiliated to JNTUK, Kakinada who participated in Inter-collegiate tournament in 2013 considered as subjects for this study. Subjects were divided in to two groups i.e. control and experimental group, each group consists of 15 players. During the tournament players got injuries like sprain, strain, fractures, dislocations and ligament injuries. Out of 30 players, 05 players under went for free hand, Stretching, locomotive, Yogic exercises and massage for 3 weeks, another 05 players taken treatment of Infra-red heat treatment and hot-packs for 2 weeks, 05 more players under went for Cryotherapy application, Ultra sound and Massage for 2 weeks under the treatment of specialists. Treatment schedule planned that, six days in a week in the morning session from 6.30am to 7.30 am and rest 5minutes after every 15 minutes. Rest of 15 players did not participate in any treatment or exercises as they belongs to control group.

Table 1: Shows No. of Players, type of injuries, treatment and duration.

No. of Players involved in treatment	Group	Kind of Injury occurred	Kind of Treatment Taken/Duration/Schedule
05	Experimental	Sprain, Strain,	Free hand, Stretching, Locomotive, Yogic exercises and Massage/3 Weeks
05	Experimental	Fractures	Infra-red heat treatment, and Hot-Packs/2Weeks
05	Experimental	Dislocations, ligament injuries	Cryotherapy application, Ultra sound and Massage/2Weeks
15	Control	Sprain, Fractures and Dislocations	Did not take any treatment

4. Results and Discussion

The purpose of the study is to find out the effect of rehabilitation on Inter-Collegiate men Volleyball players. Out of 30 players, 05 players under went for free hand, Stretching, locomotive, Yogic exercises and massage for 3 weeks, another 05 players taken treatment of Infra-red heat treatment and hot-packs for 2 weeks, 05 more players under went for Cryotherapy application, Ultra sound and Massage for 2 weeks under the treatment of specialists. 15 players of experimental group who underwent for above said treatment were recovered from injuries within scheduled time. Other 15 players of control group did not get recover as they have not taken any treatment.

5. Conclusion

A rehabilitation programme is essential for injured players and it should be conducted under the specialists. So that it will go a long way in boosting the strength and morale of the injured players. With this small study/observation we can say effect and influence of rehabilitation programme must be there on injured players in regain his original form.

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