



P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (RJIIF): 5.38
IJPESH 2023; 10(3): 249-253
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www.kheljournal.com
Received: 13-03-2023
Accepted: 24-04-2023

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Optimal management of acute soft tissue injury using Peace & Love: Observational study

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Abstract

Purpose: The aim of this study is to spread awareness of P.E.A.C.E & L.O.V.E principle, by statistically analyzing recurrence of injuries and their immediate management used by footballers. Thereby educating footballers about effects and significance of this principle, thus promoting it for optimal injury management.

Relevance: Dubois and Esculier, established and first published this study in British Journal of Sports Medicine, 2019. Their rehabilitation acronyms focused on acute, sub-acute and chronic phases of tissue healing. PEACE (immediate stage) and LOVE (further stage) addressed the significance of patient education and psychosocial factors for enriched healing. Use of anti-inflammatories was indicated to may not be incorporated in the standard management of soft-tissue injuries due to their potential unfavorable effects on optimal tissue reconstruction.

Participants: 200 footballers playing at all levels, age group 18 to 35, male and female.

Methods: Footballers from football academies/clubs in Mumbai were approached randomly for survey based observational study. Data was collected through self-made questionnaire comprising of questions related to football and its injuries, which was approved by the ethical committee of university.

Analysis: MS Office Excel Sheet (v 2019, Microsoft Redmond Campus, Redmond, Washington, United States), Statistical Package for Social Sciences (SPSS v 26.0, IBM)

Results

- **Injury recurred:** 76.5% more than once, 24.5% once
- **Immediate treatment referred:** 59.5% RICE, 30.5% PRICE, 9.5% POLICE
- **Pre-existing awareness of PEACE & LOVE:** 88% unaware, 12% aware
- 96.5% footballers found this observational study informative

Conclusion: 88% of footballers were not aware about PEACE & LOVE principle.

Implications: Footballers can refer to PEACE & LOVE as immediate management of injuries for optimal recovery, so as to avoid recurrence of injuries.

Keywords: Football, Injury, peace & love

Introduction

Playing football since an early age of my childhood it seemed the initial response to injury was simply application of ice and following R.I.C.E. However, never really understood the science behind this decision, that's just what coaches said to do!

R.I.C.E respectively known as Rest, Ice, Compress, Elevate, is a term coined and introduced into sports medicine by Dr. Robert Mirkin in his The Sportsmedicine book in 1978. From 1978 to recent years, R.I.C.E and P.R.I.C.E (Protection, Rest, Ice, Compress, Elevate) are the most widely used principle for acute/initial injuries. In 2012 Bleakley coined POLICE (Protect, Optimal Load, Ice, Compress, Elevate) an updated principle.

For the past few years, I've had the opportunity to learn and provide sideline therapeutical strategies as a trainee physical therapist to athletes primarily footballers ranging from youth up to professionals. Part of this management included carrying an ice box to the fields/stadiums and then to the athletes in need. By the time any athlete required icing, most of the ice already melted down to water due to Indian tropical climate (25 to 28 degrees Celsius, 77 to 82 degrees Fahrenheit).

Taking note of this repetitive practice I've had following questions

Is ice important?

How does ice help?

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Why use the R.I.C.E / P.R.I.C.E / POLICE principle immediately after injury as first response?

R.I.C.E / P.R.I.C.E / POLICE still best methods?

In this study you'll learn the pros and cons about icing injuries and the need to step away from common and well known principles of soft tissue injury management which includes R.I.C.E, P.R.I.C.E and POLICE, because there is so much more complexity to the management as well as rehabilitation of soft tissue injuries as these renowned methods focus on the acute management of soft tissue injuries while not providing evident literature on the sub-acute and chronic stages of soft tissue healing. The management of soft tissue injuries, whether strain or sprain, should not just focus on short term damage control. It should also focus on long term outcomes as well as focus on treating the person with the injury and not just treating the injury of the person.

In recent times Dubois and Esculier (2019) proposed two new acronyms to optimize soft tissue recovery: P.E.A.C.E and L.O.V.E. These two new acronyms include full range of soft tissue injury management right from immediate care to subsequent management. This principle not only focuses on short term goals but also highlights its importance during the latent stage of recovery while achieving long term goals.

P.E.A.C.E and L.O.V.E is considered to be an effective principle in management of acute soft tissue injury as it promotes optimum healing and reduces the chances of recurrence of injury.

Aim

The aim of this study is to spread awareness of PEACE & LOVE principle so as to manage acute soft tissue injuries optimally.

Objectives

To educate footballers about effects of PEACE & LOVE.
To signify and promote advanced techniques of optimal management for acute soft tissue injuries.

Materials and Method

- **Study design:** Observational study
- **Study setting:** Football academies/clubs in Mumbai

- **Target population:** Footballers
- **Sampling method:** Simple Random sampling
- **Sample size:** 200
- **Material required:** Self-designed questionnaire

Inclusion criteria

Footballers, both male and female, age group 18-35

Exclusion criteria

Players unwilling to participate

Procedure

- Permission will be taken from the concerned ethical committee of Tilak Maharashtra Vidyapeeth and various football academies/clubs will be approached across Mumbai.
- The aim and objectives and method of study will be explained to the participants.
- Participants will be selected according to the inclusion and exclusion criteria.
- Questionnaire will be given along with the use or need of it to us.
- Discussion will be done to make them aware about the PEACE and LOVE principle.
- The interpretation of the questionnaire will be noted and will be used for statistical analysis and result

Result and data analysis

The data obtained from the questionnaire was analyzed statistically using the following steps:

- Data obtained was compiled on a MS Office Excel Sheet (v 2019, Microsoft Redmond Campus, Redmond, Washington, United States).
- Data was subjected to statistical analysis using Statistical package for social sciences (SPSS v 26.0, IBM).

Table 1: Mean & SD of age

| | N | Minimum | Maximum | Mean | Std. Deviation |
|-----|-----|---------|---------|-------|----------------|
| Age | 200 | 18 | 35 | 26.50 | 5.338 |

Table showing mean & SD of age

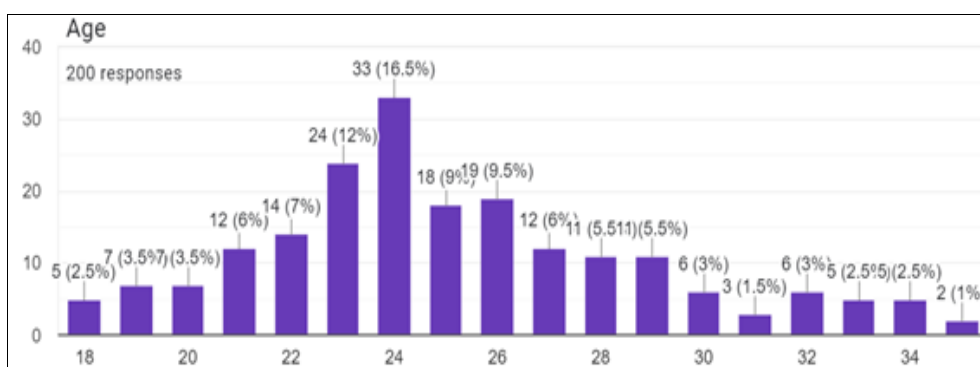


Fig 1: Graph representing distribution of age

Interpretation: Table 1 and fig 1 (graph) indicates the mean and standard deviation (SD) of the age of the subjects (26.50 ± 5.338).

Table 2: Distribution of participants as per sex

| Sex | Frequency | Percent |
|--------|-----------|---------|
| Female | 21 | 10.5 |
| Male | 179 | 89.5 |
| Total | 200 | 100.0 |

Distribution as per sex

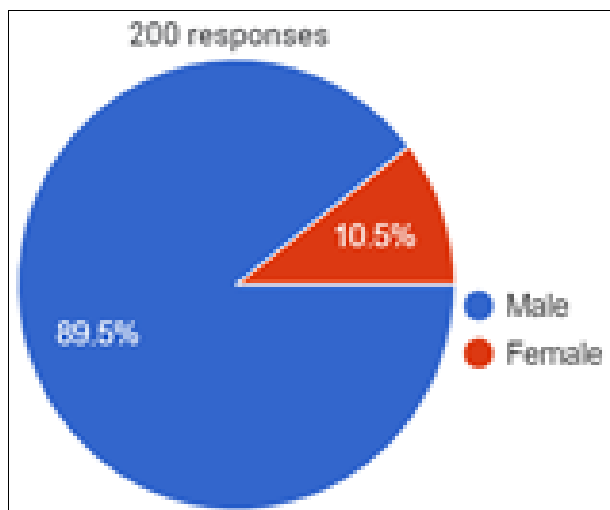


Fig 2: Pie- chart depicting distribution as per sex

Interpretation: Table 2 and fig 2 (pie chart) reflect the distribution of the subjects as per sex which included 179 males and 21 females. Level

Table 3: Levels at which football played

| Level | Frequency | Percent |
|-----------------------------|-----------|---------|
| Professional | 73 | 36.5% |
| Semi Professional (amateur) | 76 | 38% |
| Recreational | 51 | 25.5% |
| Total | 200 | 100% |

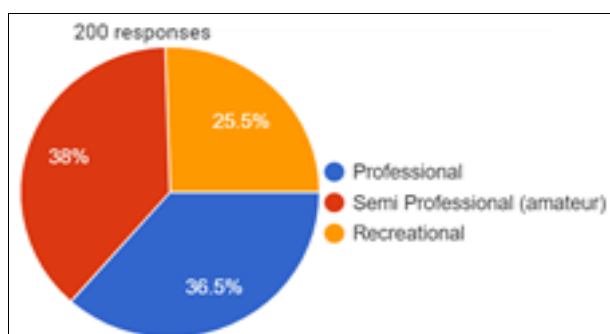


Fig 3: Pie-chart representing football played at different levels

Interpretation: Table 3 and figure 3 reflect the distribution of football players playing at various levels.

Most common site of injury

Table 4: Most common site of injury suffered by footballers on a recurrent basis

| Site | Frequency | Percent |
|----------------------------|-----------|---------|
| Foot | 9 | 4.5% |
| Ankle | 70 | 35% |
| Lower leg / Shins / Calves | 15 | 7.5% |
| Knee | 62 | 31% |
| Quadriceps | 6 | 3% |
| Hamstrings | 19 | 9.5% |
| Hip | 3 | 1.5% |
| Groin | 11 | 5.5% |
| Other | 5 | 2.5% |
| Total | 200 | 100% |

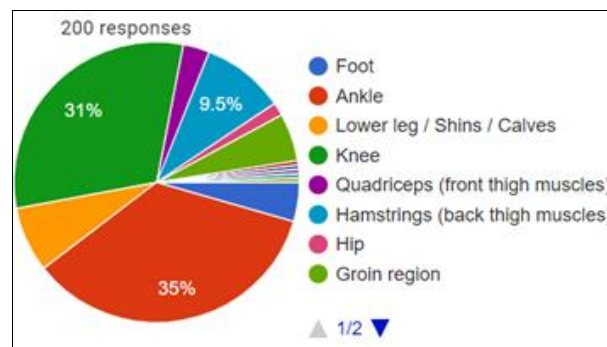


Fig 4: Pie-chart representing distribution of most common site of injury

Interpretation: Table 4 and figure 4 reflect the most common site of injury in an individual. Recurrence of injury

Table 5: Most common site at which injuries occur frequently

| No of times | Frequency | Percent |
|----------------|-----------|---------|
| Once | 43 | 21.5% |
| More than once | 157 | 78.5% |
| Total | 200 | 100% |

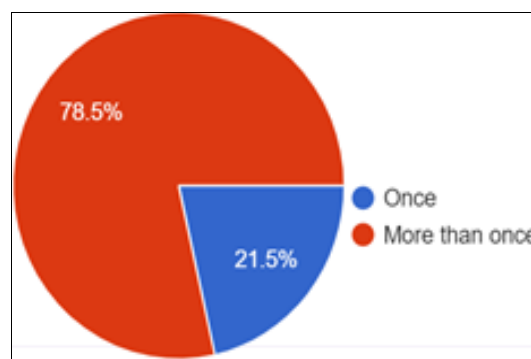


Fig 5: Pie-chart representing distribution of injuries occurring frequently at the same site

Interpretation: Injury recurred

- 78.5% more than once
- 21.5% once

Immediate treatment referred

Table 6: Immediate treatment referred to as first line management after an injury

| Protocol | Frequency | Percent |
|-------------|-----------|---------|
| R.I.C.E | 119 | 59.5% |
| P.R.I.C.E | 58 | 29% |
| P.O.L.I.C.E | 22 | 11% |
| Other | 1 | 0.5% |
| Total | 200 | 100% |

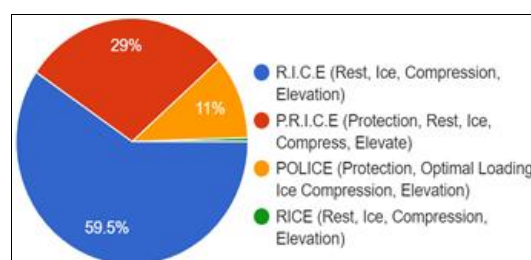


Fig 6: Pie-chart representing distribution of treatment referred to immediately after sustaining an injury

Interpretation: Immediate treatment referred-

- 59.5% rice
- 29% price
- 11% police

Pre-existing awareness of PEACE & LOVE

Table 7: Pre-existing knowledge / awareness of PEACE & LOVE principle

| | Frequency | Percent |
|---------|-----------|---------|
| Aware | 23 | 11.5% |
| Unaware | 177 | 88.5% |
| Total | 200 | 100% |

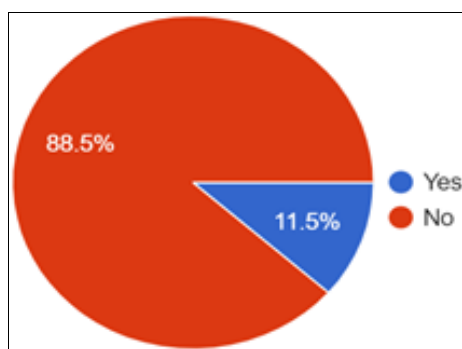


Fig 7: Pie-chart representing distribution of pre-existing awareness of PEACE & LOVE

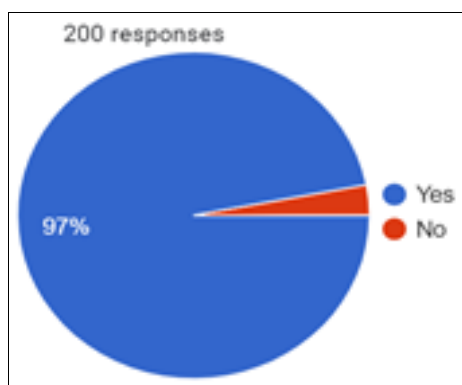
Interpretation: Pre-existing awareness of PEACE & LOVE-

- 88.5% unaware
- 11.5% aware

Was this study Informative

Table 8: Distribution of responses reflecting the study

| | Frequency | Percent |
|-------|-----------|---------|
| Yes | 194 | 97% |
| No | 6 | 3% |
| Total | 200 | 100% |



Interpretation: 97% footballers found this observational study educative

Discussion

The questionnaire used to conduct the study is designed to find out treatment strategies used by footballers as first line immediate response to manage their acute soft tissue injuries (sprains, strains, contusions). Thereby, educating footballers by spreading awareness about recent treatment strategies signifying application of advanced P.E.A.C.E & L.O.V.E protocol to be administered as first line immediate response in

order to optimally manage acute soft tissue injuries.

Dr. Mirkin, the one who coined the term RICE in 1978, recently has written, “Coaches have used my ‘RICE’ guideline for decades, but now it appears that both ice and complete rest may delay healing, instead of helping.”

Let us understand this topic a bit in detail.

When an acute musculoskeletal injury occurs we want to first rule out any fractures, dislocations, or anything else that would require referral for emergency medicine. Next, the congested area needs to be decongested. In order for this to happen, we have to utilize the lymphatic system. This system of collective vessels and organs rely mostly on extrinsic pumping of skeletal muscle and breathing to rid our bodies of waste, toxins and extra fluid.

Compression may help to reduce swelling but muscle contraction is more beneficial due to pressure differences. For example, most compression garments exert a pressure of approximately 30-40 mmHg, whereas contraction of calf causes approximately 200 mmHg of pressure on local veins. This is also why absolute rest is not likely the best practice after injury.

Muscular contraction and breathing is needed to decongest the area; may be the classic “walk it off” coaching comment wasn’t the worst advice. Movement stimulates healing through the process of mechanotransduction.

Elevation may also still be done, however, this is supported by weak evidence and is more recommended due to low-risk benefit ratio.

That covers R, C, and E of RICE. What about I-ice?

Ice was recommended to be used for proposed anti-inflammatory benefits. As stated above, inflammation is much needed to occur as it is significant to initiate the healing process. Recent research shows that anti-inflammatory medications and ice may be detrimental for long-term tissue healing.

Research done by Tseng *et al.* 2013 [16] found signs of muscle damage after applying topical cooling following eccentric exercise compared to a sham application.

The benefits of ice likely lie in the fact that most people believe that it is going to make them feel better. It is unlikely that an ice pack is reaching depths to truly make a physiological change at the injury site.

Bleakley and Hopkins 2013 [17] stated “Based on healthy human models, it is difficult to induce large decreases in intramuscular or joint temperature, particularly in circumstances of deep tissue injury or areas of higher levels of body fat. The lowest reported superficial muscle temperature (1 cm sub-adipose) after cryotherapy is 21C, in a lean athletic population. Reaching currently accepted threshold temperatures for metabolic reduction (5-15C) seems unlikely.”

It is likely that the superficial treatment of ice causes a change in our nervous system sensitivity leading to the perception of the injured area feeling better but does not really help in the process of tissue healing.

The P.E.A.C.E & L.O.V.E principle inhibits the administration of anti-inflammatory modalities (Icing, painkillers, analgesic sprays and ointments) on the injured tissue, as according to research inflammation is body’s natural response towards healing. Icing, painkillers and various analgesics work as anti-inflammatory factors, thereby postponing/delaying the process of inflammation. Thus, for mature (Complete) and accelerated healing avoid the application of ice and various anti-inflammatories.

Footballers can refer to PEACE & LOVE as immediate management of injuries for optimal recovery, so as to avoid recurrence of injuries.

Future scope

Footballers can refer to PEACE & LOVE as immediate management of injuries for optimal recovery, so as to avoid recurrence of injuries.

Conclusion

- Footballers can refer to PEACE & LOVE as immediate management of injuries for optimal recovery, so as to avoid recurrence of injuries.
- Only 11.5% footballers were aware where as 88.5% of footballers were not aware about this principle.

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