



Improving University Students' Knowledge and Skills in Sports Injury Management Using the PEACE & LOVE Protocol

Bagas Anjasmara^{*1}, Herista Novia Widanti^{*2}

^{1,2}Universitas Muhammadiyah Sidoarjo;

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ABSTRACT

Sports participation provides numerous health benefits but also increases the risk of injuries requiring appropriate early management. Limited knowledge of evidence-based sports injury management among university students may lead to improper first aid and delayed recovery. This community service program aimed to improve participants' knowledge and practical skills in sports injury management using the PEACE & LOVE protocol. A mini-workshop involving 30 students from Universitas Muhammadiyah Sidoarjo was conducted through lectures, demonstrations, hands-on practice, and interactive discussions. Program effectiveness was evaluated using pre-test and post-test assessments and participant feedback questionnaires. The results showed a marked improvement in participants' knowledge after the workshop, with most achieving good to very good levels of understanding. Participants also reported positive perceptions regarding the relevance of the materials and practical learning activities. These findings indicate that the PEACE & LOVE-based workshop is an effective educational approach for improving evidence-based sports injury management competencies and promoting safer participation in sports activities.

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Corresponding Author:

Bagas Anjasmara
Universitas Muhammadiyah Sidoarjo; bagasanjasmara@umsida.ac.id

INTRODUCTION

Sports and physical activity play an essential role in improving individual and community health. Regular participation in physical activity has been consistently associated with numerous physiological, psychological, and social benefits, including improved cardiorespiratory fitness, musculoskeletal function, mental well-being, and overall quality of life. The World Health Organization (WHO) also recognizes physical activity as one of the most effective strategies for preventing non-communicable diseases and promoting healthy lifestyles across all age groups. Furthermore, participation in sports contributes to enhanced social interaction, self-confidence, and psychological well-being, making it an important component of public health promotion [1].

Despite these benefits, sports participation inevitably increases the risk of injury. Sports injuries are frequently encountered not only among professional athletes but also among recreational exercisers and physically active individuals. Acute injuries, particularly soft tissue injuries such as sprains and strains, together with overuse injuries, represent the most common conditions requiring immediate management. Inadequate early management may delay tissue healing, reduce functional capacity, prolong return-to-sport duration, and increase the risk of recurrent injury. Beyond physical impairment, sports injuries may also produce psychological consequences, including anxiety, fear of reinjury, reduced motivation, and decreased confidence in returning to physical activity [2].

For several decades, the initial management of acute soft tissue injuries has primarily relied on the RICE (Rest, Ice, Compression, Elevation) protocol. Although this approach has been widely adopted in sports medicine, recent advances in rehabilitation science have questioned several components of the protocol, particularly prolonged immobilization and the routine use of anti-inflammatory interventions that may interfere with optimal tissue healing. Consequently, Dubois and Esculier introduced the PEACE & LOVE concept, an evidence-informed framework emphasizing Protection, Elevation, Avoid anti-inflammatory modalities, Compression, and Education (PEACE) during the acute phase, followed by Load, Optimism, Vascularisation, and Exercise (LOVE) throughout the rehabilitation process [3]. Unlike previous protocols, PEACE & LOVE adopts a biopsychosocial approach by integrating biological recovery, psychological readiness, and patient education, thereby facilitating a more comprehensive and evidence-based rehabilitation strategy.

As a higher education institution responsible for developing healthcare professionals, the Bachelor of Physiotherapy Program, Faculty of Health Sciences, Universitas Muhammadiyah Sidoarjo, has an important role in improving students' competencies in sports injury prevention and management. This responsibility is particularly relevant for students actively participating in university sports organizations and athletic clubs, who frequently encounter sports-related injuries during training and competition. Nevertheless, formal education regarding

immediate injury management and evidence-based rehabilitation strategies remains relatively limited among university students, potentially leading to inappropriate first-aid practices and delayed recovery.

To address this gap, the Bachelor of Physiotherapy Program collaborated with the University Martial Arts Student Activity Unit (UKM Beladiri Universitas Muhammadiyah Sidoarjo) to organize a seminar and mini-workshop introducing the PEACE & LOVE approach for sports injury management. The program combined scientific lectures, practical demonstrations, and supervised hands-on training delivered by physiotherapy lecturers and clinical practitioners. This community service initiative was designed to strengthen participants' theoretical understanding and practical competencies in evidence-based sports injury management while promoting safer participation in sports activities. Considering the increasing interest in recreational and competitive sports among university students, disseminating scientifically validated injury management strategies is essential to minimize inappropriate treatment practices and optimize functional recovery.

Therefore, this community service program aimed to improve participants' knowledge and practical skills in post-sports injury management using the PEACE & LOVE approach. Specifically, the program sought to: (1) introduce common sports injuries with high prevalence among physically active individuals; (2) explain the major risk factors associated with sports injuries; (3) improve participants' competencies in providing appropriate first aid for acute sports injuries; and (4) introduce fundamental rehabilitation principles based on the PEACE & LOVE framework to support safe and effective recovery following sports injuries.

METHOD

This community service program was conducted as a mini-workshop on sports injury management organized by the Bachelor of Physiotherapy Program, Faculty of Health Sciences, Universitas Muhammadiyah Sidoarjo, in collaboration with the University Martial Arts Student Activity Unit (UKM Beladiri). The activity targeted university students who actively participated in sports organizations and other students interested in sports injury prevention and rehabilitation. A total of 30 participants attended the workshop.

The program employed an interactive educational approach combining lectures, demonstrations, hands-on practice, and group discussions. This combination was selected to facilitate both theoretical understanding and practical skill acquisition in sports injury management based on the PEACE & LOVE protocol.

The implementation of the program consisted of five sequential stages.

Stage 1: Preparation

The organizing committee conducted preliminary coordination with the partner organization to identify participants' educational needs and prepare learning

materials, demonstration equipment, evaluation instruments, and workshop logistics. Educational materials were developed based on current evidence regarding acute soft tissue injury management using the PEACE & LOVE approach.

Stage 2: Educational Session

The workshop began with an interactive lecture delivered by a physiotherapy lecturer and clinical practitioner. The presentation covered common sports injuries, injury mechanisms, risk factors, principles of injury prevention, immediate first aid management, and evidence-based rehabilitation using the PEACE & LOVE protocol. Participants were encouraged to actively engage through question-and-answer sessions and open discussions regarding their previous experiences with sports injuries.

Stage 3: Practical Demonstration

Following the theoretical session, participants observed live demonstrations of sports injury management techniques. The instructor demonstrated each component of the PEACE & LOVE protocol, including protection of injured tissues, appropriate compression techniques, patient education, progressive loading principles, vascularization exercises, and gradual therapeutic exercise. Particular emphasis was placed on progressive loading and vascularization, as these concepts differ considerably from traditional injury management approaches that advocate prolonged rest and immobilization.

Stage 4: Hands-on Practice

Participants were divided into small groups to practice sports injury management through simulated clinical scenarios under the supervision of the instructors. Each participant performed basic assessment procedures, identified injuries requiring referral, applied cryotherapy using ice packs, performed compression bandaging with elastic bandages, and introduced early rehabilitation exercises appropriate for the subacute phase of recovery. This learning-by-doing strategy enabled participants to integrate theoretical knowledge with practical clinical skills.

Stage 5: Program Evaluation

The effectiveness of the workshop was evaluated using a pre-test and post-test design to assess participants' knowledge before and after the intervention. The assessment instrument consisted of questions developed according to the workshop learning objectives, covering fundamental concepts of sports injuries, first aid management, and rehabilitation principles based on the PEACE & LOVE protocol.

In addition to knowledge assessment, participants completed a satisfaction questionnaire evaluating several aspects of the workshop, including the relevance of the educational content, clarity of material delivery, instructor performance, and the

perceived usefulness of the program. The evaluation findings were used to determine the effectiveness of the educational intervention and identify opportunities for future program improvement.

RESULT AND DISCUSSION

Result

The Sports Injury Management Mini-Workshop was successfully implemented with the participation of 30 university students from various sports organizations at Universitas Muhammadiyah Sidoarjo. Throughout the program, participants demonstrated high levels of enthusiasm and active engagement during both theoretical and practical sessions.

The educational session, delivered by a physiotherapy lecturer and clinical practitioner, provided participants with evidence-based knowledge regarding common sports injuries, injury prevention strategies, first aid management, and rehabilitation principles using the PEACE & LOVE protocol. Interactive discussions encouraged participants to share their previous experiences with sports injuries and discuss common misconceptions regarding acute injury management. This exchange enabled participants to relate scientific concepts to real-life situations frequently encountered during sports activities.

The practical session represented the most interactive component of the workshop. Participants were divided into small groups and practiced sports injury management through simulated injury scenarios under instructor supervision. The practical exercises included identifying injuries requiring immediate referral, applying cryotherapy using ice packs, performing compression techniques with elastic bandages, and introducing appropriate early rehabilitation exercises during the subacute stage of recovery. The learning-by-doing approach enabled participants to translate theoretical concepts into practical clinical skills.



Figure 1 Educational Intervention PEACE & LOVE

The effectiveness of the educational intervention was evaluated using pre-test and post-test assessments. Prior to the workshop, most participants demonstrated only a moderate level of understanding regarding evidence-based sports injury

management, particularly in selecting appropriate first-aid interventions. Following completion of all workshop sessions, participants exhibited a substantial improvement in their knowledge scores. Most participants achieved good to very good levels of understanding, indicating that the workshop effectively enhanced their knowledge and practical competencies in applying the PEACE & LOVE protocol.

The distribution of participants' knowledge levels before and after the intervention is illustrated in Figures 1 and 2. Before the workshop, the majority of participants were classified within the moderate knowledge category, whereas after the intervention, most participants achieved very good knowledge levels, demonstrating the positive educational impact of the program.

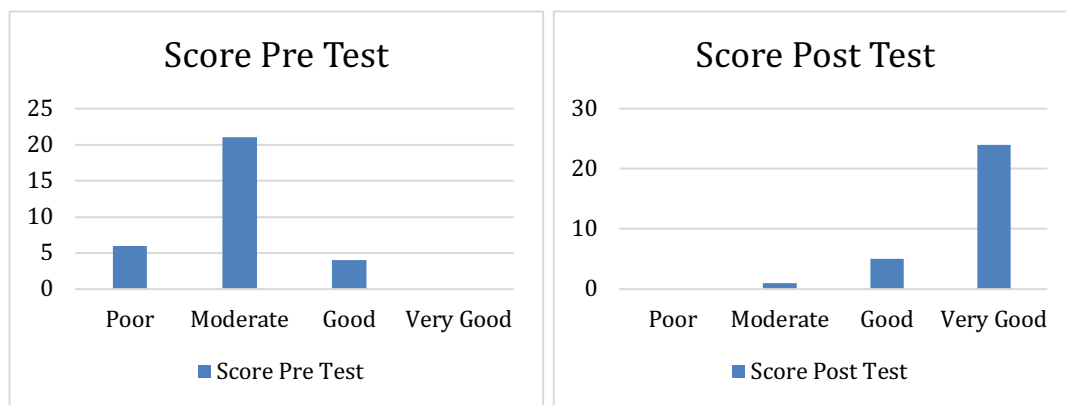


Figure 2 Pre Test & Post Test PEACE & LOVE

Overall, participants also expressed positive perceptions regarding the relevance of the workshop content, the clarity of the instructional methods, and the applicability of the practical training to sports settings. These findings indicate that the program successfully addressed participants' educational needs while strengthening their confidence in managing sports injuries appropriately.

Discussion

The findings of this community service program demonstrate that a structured educational intervention combining lectures, demonstrations, and supervised practical sessions effectively improved participants' knowledge and practical skills in sports injury management. The observed improvement between pre-test and post-test results indicates that integrating theoretical instruction with experiential learning provides an effective strategy for developing competency among university students.

Knowledge acquisition is influenced by multiple internal and external factors, including educational background, previous experience, cognitive ability, access to health information, and environmental support. Educational interventions that actively engage participants through interactive discussion and practical application facilitate deeper understanding and promote long-term retention of knowledge [4], [6]. The learning model adopted in this workshop encouraged participants not only to

receive information passively but also to practice evidence-based decision-making through simulated clinical scenarios.

Another important finding was the participants' increased understanding of the PEACE & LOVE protocol as a contemporary approach to acute soft tissue injury management. Many participants were previously familiar only with the traditional RICE protocol, which has historically emphasized rest and immobilization. Through this workshop, participants gained a broader understanding of current evidence supporting patient education, progressive loading, vascularization, optimism, and therapeutic exercise as essential components of tissue healing and functional recovery.

The PEACE & LOVE framework represents a paradigm shift in sports rehabilitation by integrating biological, psychological, and social dimensions of recovery. Rather than focusing solely on symptom reduction during the acute phase, this protocol encourages active patient participation throughout rehabilitation, facilitating improved functional outcomes and reducing the risk of recurrent injury [3], [7], [8]. Consequently, introducing this evidence-based approach to university students is expected to improve first-aid practices within sports organizations and contribute to safer participation in physical activities.

From a community empowerment perspective, this workshop also strengthened participants' capacity to disseminate appropriate sports injury management knowledge within their respective organizations and communities. Students who acquire evidence-based first-aid competencies may subsequently serve as peer educators, extending the impact of the program beyond the immediate participants. Such multiplier effects represent an important contribution of community service activities implemented by higher education institutions.

Nevertheless, several limitations should be acknowledged. The workshop evaluated only short-term improvements in participants' knowledge immediately following the intervention. Long-term retention of knowledge and practical competency was not assessed. Furthermore, the number of participants was relatively limited and drawn from a single university, which may restrict the generalizability of the findings. Future community service programs should incorporate follow-up evaluations several months after training, include larger participant groups from multiple institutions, and assess behavioral changes and practical application in real sports settings.

CONCLUSION

The sports injury management mini-workshop based on the PEACE & LOVE protocol was successfully implemented and effectively achieved its educational objectives. The program significantly improved participants' knowledge and practical skills in sports injury prevention, first aid management, and basic rehabilitation principles for acute sports injuries. The combination of interactive lectures, live

demonstrations, and supervised hands-on practice proved to be an effective educational strategy for enhancing participants' competence in applying evidence-based sports injury management.

The pre-test and post-test evaluation demonstrated a clear improvement in participants' understanding following the intervention, indicating that the workshop successfully addressed existing knowledge gaps regarding contemporary sports injury management. Furthermore, participants responded positively to the relevance of the training materials and the practical learning approach, suggesting that the program met their educational needs and increased their confidence in managing sports injuries appropriately.

This community service program also contributed to strengthening the capacity of university students to promote safe sports participation within their respective organizations and communities. By introducing the PEACE & LOVE protocol, the workshop encouraged the adoption of evidence-based practices that support optimal recovery while reducing the risk of inappropriate injury management.

Future community service programs are recommended to expand participant coverage across different universities and sports organizations, incorporate long-term follow-up evaluations to assess knowledge retention and behavioral changes, and provide more advanced practical training on emergency sports injury management and field-based rehabilitation. Such initiatives are expected to further enhance community awareness and improve the quality of sports injury management in both academic and community settings.

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BIBLIOGRAPHY

- [1] P. Marqués-Sánchez, J. A. Benítez-Andrades, M. D. Calvo Sánchez, dan N. Arias, "The socialisation of the adolescent who carries out team sports: a transversal study of centrality with a social network analysis," *BMJ Open*, vol. 11, no. 3, hlm. e042773, Mar 2021, doi: 10.1136/bmjopen-2020-042773.
- [2] N. Cederström, S. Granér, dan E. Ageberg, "Addressing Psychological Factors in Sports Injury Rehabilitation – What is a Physical Therapist to do?," *Int. J. Sports Phys. Ther.*, vol. 17, no. 2, Feb 2022, doi: 10.26603/001c.31667.

- [3] Y. Marinta, "Review of PEACE and LOVE the new era of RICE in acute soft tissue injury management? - A narrative review," *Orthop. J. Sports Med.*, vol. 13, no. 9_suppl2, hlm. 2325967125S00043, Sep 2025, doi: 10.1177/2325967125S00043.
- [4] L. Paakkari dan O. Okan, "COVID-19: health literacy is an underestimated problem," *Lancet Public Health*, vol. 5, no. 5, hlm. e249–e250, Mei 2020, doi: 10.1016/S2468-2667(20)30086-4.
- [5] D. Nutbeam dan J. E. Lloyd, "Understanding and Responding to Health Literacy as a Social Determinant of Health," *Annu. Rev. Public Health*, vol. 42, no. 1, hlm. 159–173, Apr 2021, doi: 10.1146/annurev-publhealth-090419-102529.
- [6] C. F. Brereton dan P. Jagals, "Applications of Systems Science to Understand and Manage Multiple Influences within Children's Environmental Health in Least Developed Countries: A Causal Loop Diagram Approach," *Int. J. Environ. Res. Public. Health*, vol. 18, no. 6, hlm. 3010, Mar 2021, doi: 10.3390/ijerph18063010.
- [7] B. Dubois dan J.-F. Esculier, "Soft-tissue injuries simply need PEACE and LOVE," *Br. J. Sports Med.*, vol. 54, no. 2, hlm. 72–73, Jan 2020, doi: 10.1136/bjsports-2019-101253.
- [8] A. Rizvi, T. Fatima, W. Khan, S. Asthana, dan Z. A. Naqvi, "Holistic approach to managing acute soft tissue injury: PEACE and LOVE protocol-observational research," *Int. J. Res. Orthop.*, vol. 11, no. 3, hlm. 530–534, Apr 2025, doi: 10.18203/issn.2455-4510.IntJResOrthop20251129.