

## Improving The Communities Knowledge and Skills About Recognition of Sports Injuries and the RICE Technique

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### ABSTRACT

The socialisation activity of sports injuries for aerobics instructors is based on the understanding that aerobics is a form of physical activity that can provide significant health and fitness benefits but still has a risk of injury. Sports injuries include overuse and overload of muscles. The purpose of the Community Service (PKM) activity is to explain the types of sports injuries in detail to aerobics instructors and gymnastics participants in the city of Tasikmalaya; educate aerobics instructors and gymnastics participants about the importance of understanding the types of sports injuries and their treatment; provide practical knowledge on how to apply the RICE technique in handling sports injuries. The PKM activity begins with preparing the material: making clear material (in the form of leaflets) regarding the types of sports injuries and the application of the RICE technique as well as educational videos related to the theme. The activity methods include group socialization, namely holding a socialization session in the form of a group meeting with aerobics instructors and gymnastics participants. This session involves the presentation of material on the types of sports injuries that are often experienced and interactive discussions to answer questions and clarify concepts that may arise. Next, Practical demonstration: Presenting practical examples of how to apply the RICE technique in the management of sports injuries.

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## INTRODUCTION

Sports injuries are a common health problem, especially in individuals who engage in regular physical activities such as aerobics. These injuries not only reduce the quality of life but can also reduce productivity if not treated properly. Two types of injuries that often occur are overuse injuries (repeated or excessive use of a body part) and overload (resulting from excessive or sudden load on muscles or joints) (Orejel Bustos et al., 2021). Overuse injuries are caused by repeated stress on joints, muscles, tendons or bones without allowing proper healing time. Common overuse injuries include stress fractures, tendonitis, bursitis, and shin splints. Risk factors include rapid increases in training volume or intensity, improper technique, muscle imbalances, and lack of rest and recovery. However, if the intensity of exercise is too high without proper recovery, it can lead to overuse and overuse injuries (Orejel Bustos et al., 2021). By understanding the causes of overuse injuries, the importance of proper training progression, and first aid care, the public can help prevent sports-related trauma and promote safe and healthy physical activity. Monitoring training load, recovery, and signs of overtraining are also key to avoiding overuse injuries. Overuse injuries are the most common type of injury among aerobic exercisers, often caused by training errors, inappropriate footwear, poor floor surfaces, and biomechanical factors (Belt, 1990). According to a 2021 CDC report, 9.0% of adults aged 18 and older reported experiencing a repetitive strain injury in the past three months. The highest rates were observed among adults aged 50–64 years (11.6%) and among non-Hispanic white adults (9.5%) (Anderson et al., 2022). Among those who experienced a repetitive strain injury, 44.2% reported limiting their activity for at least 24 hours, and 51.4% consulted a medical professional about their injury. The CDC High School Sports Injury Surveillance Study reported that high school sports account for approximately 2 million injuries each year, with an overall injury rate of 2.44 injuries per 1,000 athlete exposures. American football had the highest injury rate at 4.36 injuries per 1,000 athlete exposures (Matthew F. Garnett et al., 2023). A systematic review showed that overuse injuries are significant in athletic populations, with prevalence rates ranging from 15% in soccer players to as high as 68% in runners (Franco et al., 2021).

In Indonesia, data from the Indonesian Sports Doctors Association (IDOI) shows that sports injuries often occur in the productive age group who are actively involved in sports, with aerobics being one of the activities that causes the most injuries, especially overuse and overload injuries. A study of Indonesian national volleyball team athletes found that overuse and repetitive injuries were much more dominant than acute injuries. (Mansyur et al., 2021).

This community service is carried out with the aim of: Increasing participants' understanding of the types of sports injuries, especially overuse and overload injuries, and their impact on health and daily activities; Training participants in the application of the RICE technique as an effective initial treatment to reduce the impact of sports injuries.

## METHOD

This activity was attended by 15 participants and an aerobics instructor from the local community. Implementation Stages are Pretest: Before the delivery of the material, a pretest was conducted to measure the participants' initial knowledge about sports injuries and the RICE technique. This pretest was conducted in writing with several True-False (T/F) questions totalling 15 questions relevant to the topic. Delivery of Material: Material about sports injuries, including overuse and overload, and the RICE technique were delivered through leaflets and educational videos. The leaflets contained basic information about the types of injuries and the steps to apply the RICE technique. Educational videos were used to clarify the material presented, providing visualization of the steps in the RICE technique. Interactive Discussion: After the delivery of the material, an interactive discussion session was held. Participants were invited to ask questions and discuss personal experiences related to sports injuries and

how they handled them. This discussion aims to deepen understanding and answer participants' doubts about the material that has been presented. Demonstration and Redemonstration of the RICE Technique. The RICE technique was demonstrated directly by the speaker, showing the correct steps in handling injuries using this method. After the demonstration, participants are asked to redemonstrate to ensure they understand and can apply the technique correctly. Post-test: After all the materials and exercises are given, a post-test is conducted to evaluate the increase in participants' knowledge. The post-test questions are the same as the pretest questions so that a comparison of the results can provide a clear picture of the effectiveness of the activity. We can see on the chart.

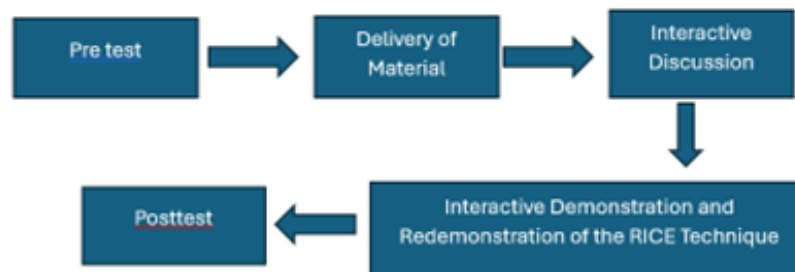


FIGURE 1. Method of community service

## RESULT AND DISCUSSION

Understanding and skills regarding types of sports injuries and their handling techniques (RICE). The results of the evaluation before the community service activities for gymnastics instructors and community aerobic gymnastics participants are shown in the pre-test results as shown in Table 1. with the majority of results at the Sufficient Knowledge Level. The post-test results showed a change (increase) in the level of knowledge of community service participants to the majority at the Good Level (Table 2.).

TABLE 1. Pre-test knowledge level overview

No	Knowledge level Category	Percentage
1	Very good	57 %
2	Less than fair	36 %
3	Poor	7 %

TABLE 2. post-test knowledge level overview

No	Knowledge level Category	Percentage
1	Very good	57 %
2	Less than fair	36 %
3	Poor	0%

The most well-known and successful intervention for treating and preventing the effects of aging on CV dysfunction is aerobic exercise. (Murray et al., 2023). Aerobic exercise is a popular form of physical exercise among the public, especially in the adult and elderly age groups. Recent European and American hypertension guidelines advocate aerobic exercise (AE), such as walking and running, as a reasonably inexpensive, safe, and readily available nonpharmacological approach to prevent or treat hypertension. (Esmailiyan et al., 2023). It offers a variety of health benefits, including improved cardiovascular health, weight loss, and increased muscle strength. However, aerobic exercise also carries a high risk of injury, especially if performed without adequate warm-up or with incorrect technique. Sports-related and physical activity-related injuries can be chronic and seriously impair a player's quality of life and financial security. (Zadeh et al., 2021). Acute injuries and overuse syndromes are the two forms

of sports injuries that can arise from contact or noncontact exercise. Sports injuries primarily affect muscles and ligaments, although they can also affect bones due to stress fractures or direct contact, which is relatively specific to sports. (Emran et al., 2020). Injuries that are not treated properly can be fatal and cause long-term disorders.

The introduction and application of the RICE (Rest, Ice, Compression, Elevation) technique as an early treatment for sports injuries is essential to reduce the impact of these injuries. In the field of sports medicine, RICE (rest, ice, compression, elevation) and PRICE (protection, rest, ice, compression, elevation) have long been the standard treatments for acute soft tissue injuries (Busby, 2023). This suggests that overuse injuries are often underreported and may benefit from early treatment such as RICE (Orejel Bustos et al., 2021). The RICE (Rest, Ice, Compression, Elevation) method is often recommended for managing overuse injuries in aerobic dance. It provides pain relief and, when combined with addressing the underlying cause of the injury, can facilitate a successful return to activity. The RICE technique is effective in reducing swelling, pain, and recovery time in mild to moderate sports injuries. However, many people still do not understand how to apply this technique correctly, which can worsen the injury (Amy Gopal, 2024).

The basic idea behind using ice on injured tissues is to lessen inflammation. It is crucial to remember that anything that lessens inflammation also slows down the healing process because inflammation is a necessary part of the healing process. Topical chilling, or ice, functions as a vasoconstrictor, restricting local blood arteries, when applied to injured tissues. This physiological reaction prevents neutrophils and inflammatory substances from reaching the damaged site. (Scialoia et al., 2020).

## CONCLUSION

The introduction and application of the RICE (Rest, Ice, Compression, Elevation) technique as an early treatment for sports injuries is essential to reduce the impact of these injuries. This suggests that overuse injuries are often underreported and may benefit from early treatment such as RICE. Participants in community service activities have gained increased knowledge about sports injuries and RICE techniques in handling overuse and overload.

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## REFERENCES

- Amy Gopal, S. S. (2024). *RICE Method for Injuries*. <https://www.webmd.com/first-aid/rice-method-injuries>
- Anderson, C. A. J., Suna, J. M., Keating, S. E., Cordina, R., Tran, D. L., Ayer, J., & Coombes, J. S. (2022). Safety and efficacy of exercise training in children and adolescents with congenital heart disease: A systematic review and descriptive analysis. In *American Heart Journal* (Vol. 253, pp. 1–19). Elsevier Inc. <https://doi.org/10.1016/j.ahj.2022.06.006>
- Belt, C. R. (1990). Injuries associated with aerobic dance. *American Family Physician*, 41(6), 1769–1772. <http://www.ncbi.nlm.nih.gov/pubmed/2349908>
- Busby, C. (2023). The PRICE of Injury Treatment: Out With the Old and In With the New. *ACSM'S Health & Fitness Journal*, 27(1), 5–7. <https://doi.org/10.1249/FIT.0000000000000825>
- Emran, M. A., Khandaker, M. N., Ahmed, S. M., Islam, M. T., Khasru, M. R., & Salek, A. (2020). Sports Injury: Rehabilitation Updates. *Bangladesh Medical Journal*, 49(2), 34–40. <https://doi.org/10.3329/bmj.v49i2.55818>
- Esmailiyani, M., Amerizadeh, A., Vahdat, S., Ghodsi, M., Doewes, R. I., & Sundram, Y. (2023). Effect of Different Types of Aerobic Exercise on Individuals With and Without Hypertension: An Updated

- Systematic Review. *Current Problems in Cardiology*, 48(3), 101034.  
<https://doi.org/10.1016/j.cpcardiol.2021.101034>
- Franco, M. F., Madaleno, F. O., de Paula, T. M. N., Ferreira, T. V., Pinto, R. Z., & Resende, R. A. (2021). Prevalence of overuse injuries in athletes from individual and team sports: A systematic review with meta-analysis and GRADE recommendations. *Brazilian Journal of Physical Therapy*, 25(5), 500–513.  
<https://doi.org/10.1016/j.bjpt.2021.04.013>
- Mansyur, A. S., Widyahening, I. S., & Cahyani sudarsono, N. (2021). Incidence of musculoskeletal injuries among Indonesian volleyball athletes during a national training and championship. *Gazzetta Medica Italiana Archivio per Le Scienze Mediche*, 180(7–8). <https://doi.org/10.23736/S0393-3660.20.04382-X>
- Matthew F. Garnett, Nazik Elgaddal, & Merianne Rose Spencer. (2023). *National Health Statistics Reports, Number 189, July 25, 2023. 189.*
- Murray, K. O., Mahoney, S. A., Venkatasubramanian, R., Seals, D. R., & Clayton, Z. S. (2023). Aging, aerobic exercise, and cardiovascular health: Barriers, alternative strategies and future directions. *Experimental Gerontology*, 173, 112105. <https://doi.org/10.1016/j.exger.2023.112105>
- Orejel Bustos, A., Belluscio, V., Camomilla, V., Lucangeli, L., Rizzo, F., Sciarra, T., Martelli, F., & Giacomozzi, C. (2021). Overuse-Related Injuries of the Musculoskeletal System: Systematic Review and Quantitative Synthesis of Injuries, Locations, Risk Factors and Assessment Techniques. *Sensors*, 21(7), 2438. <https://doi.org/10.3390/s21072438>
- Scialoia, D., Swartzendruber, A. J., & Scialoia Saint Joseph, D. (2020). *The R.I.C.E Protocol is a MYTH: A Review and Recommendations thesportjournal.org/article/the-r-i-c-e-protocol-is-a-myth-a-review-and-recommendations.*
- Zadeh, A., Taylor, D., Bertso, M., Tillman, T., Nosoudi, N., & Bruce, S. (2021). Predicting Sports Injuries with Wearable Technology and Data Analysis. *Information Systems Frontiers*, 23(4), 1023–1037.  
<https://doi.org/10.1007/s10796-020-10018-3>