



Applied Fitness Massage Training for NPC North Sumatra Athletes and Former Athletes: Enhancing Performance and Post-Exercise Recovery

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Abstract.

Athletes and former athletes of the National Paralympic Committee (NPC) of North Sumatra face challenges related to fitness, muscle fatigue, and ongoing post-exercise recovery. Limited access to appropriate recovery services necessitates applied fitness massage training to enhance performance and physical recovery. This community service activity aims to equip current and former NPC athletes in North Sumatra with the knowledge and practical skills of safe, effective, and appropriate fitness massage for sports with disabilities. The methods used include interactive lectures, technique demonstrations, hands-on practice, and participant skill evaluation. The results of the activity indicate an increase in participants' understanding of the principles of fitness massage, their ability to perform basic massage techniques, and their awareness of the importance of post-exercise recovery to maintain performance and prevent injury. Overall, this training positively contributes to supporting athlete performance and recovery and has the potential to be implemented sustainably in the NPC North Sumatra development program.

Keywords: Applied fitness massage, Athletes and former athletes, NPC North Sumatra, Sports performance, Post-exercise recovery

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How to Cite:

INTRODUCTION

Athletes and former athletes of the North Sumatra National Paralympic Committee (NPC) are a group with high physical demands due to the intensity of training and continuous competition. Repetitive, high-intensity training activities have the potential to cause muscle fatigue, musculoskeletal pain, and slow post-exercise recovery if not balanced with proper recovery management. Optimal recovery is a key factor in maintaining fitness, preventing injury, and maintaining athlete performance, including for athletes with disabilities who have special physiological and biomechanical characteristics. Training loads that are not balanced with appropriate recovery strategies have the potential to cause chronic fatigue, muscle pain, and decreased performance and quality of life for athletes (Bomp a & Haff, 2019).

Fitness massage is a recovery method widely used in sports because it improves blood circulation, reduces muscle tension, and accelerates tissue relaxation (Best et al., 2020:14). Several studies have shown that fitness massage significantly contributes to reducing muscle fatigue and improving athletes' physical readiness for subsequent training sessions. Research by Munawar (2020) reported that implementing structured post-workout massage can improve recovery and reduce the risk of overuse injuries. Similar findings were also presented by Putra and Rahma (2021), who stated that fitness massage plays a crucial role in maintaining consistent athlete performance in long-term training programs.

Although the benefits of fitness massage have been extensively empirically proven, its application among athletes and former athletes of the North Sumatra NPC remains limited. Most athletes lack the knowledge and skills necessary to apply fitness massage techniques safely and appropriately to the needs of disabled sports. This situation leads to a reliance on a

limited number of professionals, resulting in suboptimal post-workout recovery. Therefore, applied fitness massage training is seen as crucial as a form of community service aimed at improving the capacity of human resources in sports.

The applied fitness massage training aims not only to provide theoretical understanding but also emphasizes practical skills that can be applied independently and sustainably. This approach aligns with the concept of sports community empowerment, which aims to equip athletes and former athletes with relevant competencies to support long-term health and performance. Therefore, this community service activity has strategic urgency in supporting the performance and post-training recovery of athletes and former athletes from the North Sumatra NPC in a systematic and evidence-based manner.

METHOD

This community service activity uses a participatory and applied approach designed to achieve the goal of increasing the knowledge, skills, and independence of athletes and former athletes of the North Sumatra NPC in performing fitness massage to support performance and post-training recovery. The implementation method is systematically arranged so that the results of the service can be measured objectively and can be scientifically accounted for .

Design and a. Stages of Activities

The community service method is implemented through several stages, namely: (1) needs analysis, (2) implementation of applied training, (3) practical mentoring, and (4) evaluation of program achievement. The needs analysis was conducted through initial observations and discussions with the administrators and athletes of the North Sumatra NPC to identify problems related to post-training recovery and limitations in fitness massage skills.

The applied training consisted of interactive lectures to convey the basic concepts of fitness massage, technique demonstrations by instructors, and hands-on practice by participants in pairs. The practical guidance ensured that massage techniques were performed correctly, safely, and appropriately for the needs of athletes with disabilities.

b. Subject and Location of Community Service

The community service activities were conducted by current and former athletes from the North Sumatra NPC who actively participate in sports development programs. The activities were conducted at the North Sumatra NPC training center, taking into account accessibility and participant comfort.

c. Measuring Tools and Data Collection Techniques

Community service results are measured using quantitative and qualitative descriptive approaches. The measuring instruments used include:

1. Pre-test and post-test questionnaires, to measure the increase in participants' knowledge and understanding of the concept and benefits of fitness massage.
2. Skills observation sheet, to assess participants' ability to apply basic fitness massage techniques practically.
3. Attitude and perception questionnaire, to determine changes in participants' attitudes towards the importance of post-exercise recovery.
4. Short interviews and focus group discussions, to explore participants' experiences, the benefits of the activities, and the perceived social and economic impacts.

d. Analysis Techniques and Measurement of Achievement Level

The level of success achieved in community service activities was analyzed by comparing pre-test and post-test results descriptively to determine improvements in knowledge and skills. Observation and interview data were analyzed qualitatively by grouping key themes that emerged from participant responses.

The success of community service activities is measured based on several indicators, namely:

1. **Changes in attitude** , demonstrated by increased awareness and commitment of participants in implementing fitness massage as part of their post-workout recovery routine.
2. **Socio-cultural changes** are reflected in the formation of habits of mutual assistance among athletes in carrying out fitness massages and the increasing structured recovery culture in the North Sumatra NPC environment.
3. **Economic changes** , demonstrated by the potential use of fitness massage skills as a simple service opportunity for former athletes or as a cost-saving measure for recovery that previously relied on professional services.

With this method, community service activities are expected to provide measurable, sustainable, and relevant impacts to the needs of athletes and former athletes of the North Sumatra NPC in supporting post-training performance and recovery.

RESULTS AND DISCUSSION

The community service activity, which included applied fitness massage training, was attended by current and former athletes from the North Sumatra NPC. The results were obtained by measuring participants' knowledge, skills, and attitudes before and after the training using pre-tests, post-tests, observation sheets, and perception questionnaires.

Descriptively, participants' knowledge of the basic concepts of fitness massage, its physiological benefits, and safety principles in its application increased. Furthermore, participants' practical fitness massage skills also showed significant improvement after participating in the demonstration and hands-on practice sessions. Positive attitudinal changes were evident in participants' increased awareness of the importance of post-workout recovery as part of a sustainable training program.

Table 1. Pre-Test and Post-Test Results

Assessment Aspects	Pre-Test (Average)	Post-Test (Average)
Knowledge of fitness massage concepts	62. 5	85. 3
Understanding the benefits of recovery	64. 1	87. 6
Security principles and basic techniques	60. 8	84. 2

The results of the community service program indicate that applied fitness massage training has a positive impact on improving the knowledge, skills, and attitudes of athletes and former athletes of the North Sumatra NPC. The increase in post-test scores is consistent with the fact that a good understanding of sports massage principles will increase the effectiveness of its application in the physical recovery process. The observed improvement in fitness massage practical skills supports the theory of motor skills learning which emphasizes the importance of demonstration and direct practice in mastering psychomotor skills (Bompa & Haff, 2019). Through the applied training approach, participants not only gain theoretical knowledge but also are able to apply fitness massage techniques independently and safely.

In terms of attitude change, the questionnaire results indicated increased participant awareness of the importance of post-exercise recovery. This finding aligns with Kellmann et al. (2018), who asserted that athletes' awareness of recovery strategies directly contributes to sustained performance and the prevention of chronic fatigue. In the context of athletes with

disabilities, this increased awareness is crucial due to the different biomechanical load characteristics and higher risk of injury (Tweedy & Vanlandewijck, 2011).

From a socio-cultural perspective, this training fosters the habit of mutual assistance among athletes in performing fitness massage, thus fostering a more structured recovery culture within the North Sumatra NPC. Economically, the acquired fitness massage skills have the potential to be utilized by former athletes as a simple service opportunity or as a way to reduce recovery costs, which previously relied on professional assistance. This aligns with the concept of community empowerment through the development of applied skills (Munawar, 2020:14).

Thus, these results and discussion indicate that applied fitness massage training is effective in supporting the performance and post-exercise recovery of athletes and former athletes of the North Sumatra NPC, and is relevant to be developed as a sustainable and community service program.

CONCLUSION

Community service activities through applied fitness massage training for current and former athletes of the North Sumatra NPC have proven to produce positive and measurable results. This training successfully increased participants' knowledge of the concepts, benefits, and safety principles of fitness massage, as well as improved massage practice skills that can be applied independently to support performance and post-exercise recovery. Furthermore, positive attitudinal changes occurred, marked by increased participant awareness of the importance of recovery as an integral part of a sustainable training program.

The advantage of this activity lies in its applied and participatory training approach, enabling participants to acquire not only theoretical understanding but also practical skills. The demonstration and hands-on practice methods enable effective skill transfer and foster a more structured recovery culture within the North Sumatra NPC. From a social and economic perspective, this training has the potential to empower athletes and former athletes by utilizing fitness massage skills to reduce recovery costs and provide a simple service opportunity. However, this activity still has limitations, including the relatively short training duration and the lack of in-depth coverage of more advanced massage techniques specific to sports and disability characteristics. Furthermore, a comprehensive evaluation of the long-term impact on performance improvement and injury reduction has not been conducted.

Based on these results, further activity development is recommended to extend the training duration, add more specific advanced massage material, and provide ongoing mentoring. Further research and community service are also needed to assess the long-term impact of training on athlete performance, health, and independence, so that the applied fitness massage training program can be implemented more optimally and sustainably.

ACKNOWLEDGMENT

1. Continuous Program Development
Fitness massage training is recommended to be implemented continuously and in a programmed manner so that participants' skills can be continuously improved and applied consistently in their training routines.
2. Integration with Athlete Development Program
Fitness massage needs to be integrated into the NPC North Sumatra athlete development program as part of post-exercise recovery management and injury prevention.
3. Advanced Competency Enhancement
Advanced training with more specific materials is required, such as massage for minor injury recovery and neuromuscular relaxation, to maximize the benefits obtained.
4. Involvement of Trainers and Athlete Companions
Trainers and athlete companions are advised to be actively involved in training so that

the application of fitness massage can be monitored and adjusted to the physical condition of each athlete.

5. Program Replication to Other Regions

This training model is recommended for replication in disabled athlete communities in other regions as an effort to equalize inclusive fitness and sports recovery services.

AUTHOR CONTRIBUTION STATEMENT

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