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Stick Gymnastics Training to Improve Motor Skills

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ABSTRAK

Pelatihan senam menggunakan stik merupakan salah satu bentuk intervensi kebugaran masyarakat yang bertujuan untuk meningkatkan kemampuan gerak motorik, khususnya pada kelompok usia dewasa. Kegiatan pengabdian masyarakat ini dilakukan di RW 06 Kelurahan Kalibanteng Kulon, dengan melibatkan 20 peserta yang didominasi oleh ibu-ibu. Metode yang digunakan adalah pelatihan langsung dengan pendekatan partisipatif, dimulai dari identifikasi masalah, *pre-test*, pelatihan senam, hingga *post-test*. Hasil evaluasi menunjukkan adanya peningkatan pemahaman dan keterampilan motorik peserta, dari skor *pre-test* sebesar 52% menjadi 82% pada *post-test*. Kenaikan sebesar 30% ini mencerminkan efektivitas metode pelatihan berbasis alat bantu sederhana seperti stik. Program ini tidak hanya memberikan manfaat fisik, tetapi juga mendorong partisipasi aktif warga dalam aktivitas sehat yang menyenangkan dan mudah diakses. Pelatihan senam stik terbukti menjadi media edukatif dan preventif yang tepat untuk pengembangan kapasitas gerak masyarakat secara berkelanjutan.

Keywords:
community; motor skills; stick exercise; training

ABSTRACT

Stick exercise training is a form of community fitness intervention aimed at improving motor skills, particularly among adults. This community service activity was carried out in RW 06, Kalibanteng Kulon Village, involving 20 participants, mostly women. The method used was direct training through a participatory approach, beginning with problem identification, followed by a pre-test, stick exercise session, and post-test. The evaluation results showed a significant improvement in participants' motor understanding and skills, with scores increasing from 52% in the pre-test to 82% in the post-test. The 30% increase indicates the effectiveness of training methods using simple equipment like sticks. This program not only provides physical benefits but also encourages active community participation in fun, accessible, and healthy activities. Stick exercise training has proven to be an appropriate educational and preventive medium for sustainably developing motor capacity within the community.

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INTRODUCTION

The global pandemic that emerged in late 2019 led to a significant decline in physical activity across communities. Maintaining optimal physical condition has become increasingly essential, as it plays a critical role in reducing the risk of various health issues. One indicator of physical fitness is the adequacy of oxygen in the body, commonly measured through oxygen saturation levels. Awareness of one's oxygen saturation is therefore crucial, particularly for individuals who frequently engage in physical activity (Wulandari & Wigunantiningsih, 2022).

Exercise plays a pivotal role in promoting a healthy lifestyle. When performed regularly, it enhances the function of vital organs, especially the heart and lungs. Stick-based exercise, in particular, not only improves motor skills but also contributes to overall physical fitness and helps individuals achieve an optimal state of health. The benefits of physical activity for mental and physiological health have been widely acknowledged. Saufi et al. (2024), Saputra (2020), and Hindun, Agustina, & Suhartatik (2022) highlight that exercise can enhance immunity, reduce stress, lower blood pressure, burn calories, boost brain function, improve flexibility, and expedite recovery from illness or injury. Among various physical activities, rhythmic gymnastics aligns well with these benefits due to its demand for active and coordinated body movement.

Gymnastics, as a structured form of physical activity, aims to enhance both physical fitness and motor abilities. In recent years, various studies have indicated that the use of simple tools such as sticks during gymnastics routines offers an effective and engaging training alternative for people across different age groups (Simamora et al., 2024; Solihin, 2021; Nurjani & Tini, 2024). Gymnastics serves not only as a recreational activity but also as a strategic intervention to preserve and improve both gross and fine motor functions.

The use of sticks as an assistive tool in gymnastics adds a level of coordinative challenge and visual-motor stimulation that benefits participants. Mubin, Soegiyanto, and Sulaiman (2018) developed a stick gymnastics model aimed at improving motor abilities and found that such interventions significantly enhanced psychomotor, affective, and cognitive aspects in elementary school students. With movement adaptations tailored to participants' age and skill levels, stick gymnastics becomes a versatile activity suitable for adults and the elderly alike, including members of the general public seeking to improve their physical health and movement competence.

Furthermore, rhythmic gymnastics has consistently been shown to enhance physical fitness and motor ability across age groups. Nur Azizah and Efendi (2025) demonstrated that structured rhythmic exercise improved motor skills in adult community participants. Similarly, rhythmic gymnastics accompanied by music significantly improved gross motor development in early childhood (Zulpina et al., 2024). These findings underscore the broad applicability and adaptability of rhythm-based movement as a community intervention model.

From the perspective of motor learning theory, the use of tools such as sticks in exercise routines provides multisensory stimuli that enhance the development of efficient and coordinated movement patterns. Stick-assisted training helps improve concentration, response speed, and movement synchronization, particularly when practiced repetitively and systematically (Gea, 2018). Such training also strengthens neuromuscular functions, which are critical in preserving mobility and autonomy, especially among the elderly.

Based on this background, the present community service initiative aims to evaluate the effectiveness of stick-based gymnastics training in enhancing motor skills. It is anticipated that this training model will offer a practical and applicable solution for community-based fitness programs, while also enriching inclusive and adaptive approaches to physical exercise training.

LITERATURE REVIEW

In the field of sports science, physical activity is generally classified into two main categories: aerobic and anaerobic exercise. Aerobic exercise refers to activities that utilize oxygen as the primary energy source during low- to moderate-intensity movements performed over a prolonged duration, such as gymnastics, brisk walking, or cycling. In contrast, anaerobic exercise involves short bursts of high-intensity activity—such as sprinting or weightlifting which do not rely on oxygen intake in real time (Saptono, Sumintarsih, & Purwandono Saleh, 2021). Within the context of physical fitness, aerobic gymnastics is considered one of the most appropriate forms of training due to its accessibility and its effectiveness in enhancing cardiovascular function, flexibility, and bodily coordination.

As times evolve, aerobic gymnastics has also undergone various innovations. One such development widely implemented in community-based exercise programs is stick gymnastics. This activity is a structured physical exercise that utilizes light sticks or drumsticks as aids. Besides enhancing physical fitness, stick gymnastics has also been shown to improve posture and develop motor coordination skills (Revansyaych, Suseno, & Yoman, 2024; Wicaksono et al., 2024).

Community development through physical activities such as gymnastics has become a strategic approach to improving quality of life, fitness, and motor skills across age groups. According to Margayaningsih (2018), community empowerment through recreational sports has been proven to increase active participation in healthy activities and to strengthen social bonds within the neighborhood. One effective approach is rhythmic gymnastics supported by simple tools like sticks, which serve not only a preventive role against degenerative diseases but also function as a medium for motor skill development.

From a theoretical perspective, motor learning emphasizes that human movement abilities can be improved through structured, repetitive training that integrates coordination, strength, and response speed (Magill & Anderson, 2017). The

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use of tools such as sticks enhances participants' focus, stimulates neuromuscular activation, and supports coordination between upper and lower limbs. Tool-assisted training also introduces new stimuli, increasing exercise complexity and challenge gradually boosting motor performance. Research indicates that structured motor training in adolescents significantly improves coordination and working memory, implying its broader applicability in diverse settings (Rahman & Khadijah, 2023; Rosmi & Nurhuda, 2024).

Several previous community service initiatives have demonstrated the success of gymnastics-based programs in improving physical capabilities. Elderly gymnastics training programs, for example, have yielded significant improvements in balance and flexibility when practiced regularly, even independently (Efendi et al., 2023). Community-based rhythmic gymnastics not only promotes greater social engagement and enthusiasm among older participants but also helps reduce joint pain and muscle stiffness. Another study revealed that a combination of ergonomic exercise and spiritual-based therapy (zikr) effectively reduced joint pain levels among the elderly in Makassar (Satriana, 2022).

Furthermore, Mubin, Soegiyanto, and Sulaiman (2018) designed a stick gymnastics model originally intended for elementary school children. However, its core principles have been adapted more broadly for community development. The model has been shown to increase participants' psychomotor abilities by 34.6%, with consistent outcomes when applied to wider community groups, given appropriate modifications to movement and intensity. This illustrates the flexibility of stick gymnastics to meet the needs of various age demographics from children to the elderly.

Gymnastics has also proven to be an inclusive vehicle for community development by accommodating individuals with physical limitations. For instance, Solihin (2021) reported that rhythmic gymnastics for visually impaired children aged 9-12 significantly improved their motor abilities from 35.71% to 93.91% over two training cycles. Stick-based movements, which require coordination between upper and lower limbs, concentration, and balance, are thus highly relevant for community motor development.

Given the critical role of gymnastics in improving quality of life, a systematic approach is needed to introduce and foster motor skills development in the community particularly through stick gymnastics. Therefore, as part of a community service program, an in-person training session was held in Kelurahan Kalibanteng Kulon, Semarang City. The training consisted of one intensive session, preceded and followed by pre- and post-tests to evaluate the improvement in participants' motor abilities.

METHODS

The implementation of this community service initiative employed a training-based and participatory approach, emphasizing the active involvement of local residents throughout all stages. The activity, themed "Stick Exercise Training to Improve Motor

Skills", aimed to enhance residents' motor abilities particularly among women through a simple, structured, and enjoyable physical routine.

This program was designed to address the needs of residents in RW 06, Kalibanteng Kulon Subdistrict, for accessible and health-enhancing physical activities. Preliminary observations and informal discussions with community members revealed that many residents especially women reported issues such as reduced mobility, decreased flexibility, and a lack of regular physical activity. Stick-based gymnastics was chosen as a suitable intervention due to its simplicity, affordability, and effectiveness in promoting both motor function and overall physical fitness.

The target audience for this program was the local residents of RW 06, with a particular focus on adult women who were actively engaged in community life and demonstrated enthusiasm for fitness training. Participants were selected through community meetings and consultations with local leaders. The criteria included: adults and early elderly individuals, stable health conditions suitable for light physical activity, and willingness to participate fully in the training program.

The training method was conducted through in-person sessions, incorporating direct movement demonstrations, interactive discussions, and evaluation of training outcomes. This approach also integrated elements of Participatory Action, whereby participants were actively involved in identifying the problems, contributing to solution strategies, and engaging in follow-up efforts.

The implementation was structured in three main phases:

Phase 1: Problem Identification

1. An initial survey and informal discussions were conducted with community leaders and residents to explore concerns and needs related to physical activity and wellness. These discussions employed a family-oriented approach to facilitate open and inclusive dialogue.
2. The schedule and location of the program were mutually agreed upon by the organizing team and the residents, considering convenience, facility availability, and participant readiness.

Phase 2: Problem-Solving Approach

The core stick gymnastics training was implemented in the following sub-steps:

1. An introductory Q&A session was held to explain the concept of stick gymnastics and its relevance to motor fitness.
2. A pre-test was administered to assess baseline motor abilities such as balance, coordination, and flexibility.
3. The training session included a live demonstration led by a certified instructor, followed by group practice. Participants also received video tutorials for independent practice at home.
4. A post-test was conducted after the training session to evaluate progress and improvements in participants' motor abilities.

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Phase 3: Program Outcomes

The outcomes of this activity included: a community service report, a scientific article for publication in a national journal, a draft for intellectual property registration (HKI), stick exercise training module that can be independently used by other communities or individuals.

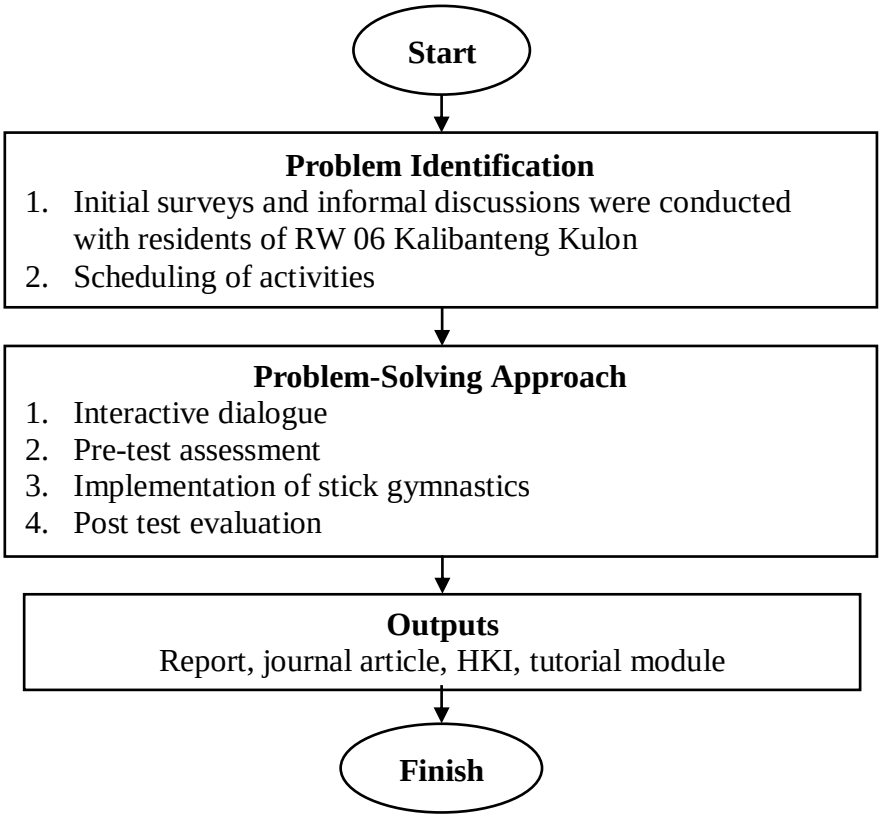

Figure 1. Stages of Community Service Implementation

RESULT AND DISCUSSION

The stick exercise training aimed at improving motor skills among the residents of RW 06, Kalibanteng Kulon Subdistrict, yielded a significant impact on participants' understanding and practical abilities in fundamental motor functions. Evaluation of the program was conducted in two stages: a pre-test administered prior to the training session and a post-test following its completion. The test was designed using a combination of written questions and simple practical tasks, assessing participants' understanding of motor movement concepts, their ability to follow instructions, and their performance in areas such as balance, coordination, and flexibility, all of which were directly observable. A total of 20 participants were actively involved in the training session (Figure 2).

The evaluation revealed that the average pre-test score was 52% (Table 1), with the majority of participants falling under the moderate category (60%), and the rest in the good category (40%). These results indicate that prior to the training, most

participants had limited understanding of basic motor principles and lacked proficiency in stick exercise techniques. Following the training, the post-test results improved significantly to an average score of 82%, with 20% classified as good and a remarkable 80% reaching the very good category. This 30% increase from the pre-test results illustrates that the training was successful not only in enhancing participants' conceptual understanding but also in developing their motor execution skills, as evidenced by improved movement patterns and better body coordination during exercise.

Figure 2. Documentation of PkM

Table 1. Questionnaire Results

Questions	Score Weight	
	Number of Correct Answer	
	Pre-Test	*Post-Test*
1	9	17
2	12	16
3	8	14
4	10	18
5	13	17
6	12	19
7	12	15
8	9	17
9	11	16
10	8	15
Pencentage	**52%**	**82%**

The questions in both pre-test and post-test were constructed based on three key motor indicators: coordination ability (such as synchronization of hand and foot movements), dynamic balance, and instructional comprehension. For instance, items

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number 4 and 6, which showed the highest improvement in the post-test, reflected the participants' enhanced ability to perform patterned movements requiring bilateral coordination. Similarly, items number 1 and 3, which initially received low scores, demonstrated considerable improvement, indicating that the stick gymnastics material was effective in simplifying complex motor concepts into forms more accessible and applicable for the general community, including individuals without prior sports experience.

This improvement aligns well with motor learning theory, which posits that skill development is optimized through repetitive practice and real-time demonstration, thereby facilitating stable and well-coordinated movement patterns (Magill & Anderson, 2017). Furthermore, the communicative and adaptive training approach, tailored to participants' pace and supported by the use of assistive tools such as sticks, proved to deliver a more effective sensorimotor stimulus than conventional exercise models. The use of simple aids during training enhanced participants' attention and focus on movements and accelerated neuromuscular adaptation within a relatively short duration.

The results of this program strongly support the argument stated in the introduction that stick exercise training serves as an effective and practical intervention for multi-age communities. This activity successfully addressed the community's need for a light, enjoyable, and beneficial physical activity that promotes comprehensive physical fitness. Moreover, it fostered the development of healthy lifestyle habits within the community and opened up the potential for scaling and expanding the training to reach broader participant groups in future community health initiatives.

CONCLUSION

The stick gymnastics training program conducted in RW 06, Kalibanteng Kulon Subdistrict, has successfully made a tangible contribution to improving the motor skills of the local residents, particularly among women as the primary participants. Based on quantitative evaluations through pre-test and post-test assessments, participants' understanding and motor abilities increased from 52% to 82%, reflecting a 30% improvement. This outcome demonstrates that the direct training approach, combined with the use of simple tools such as sticks, proved effective in developing basic motor skills including coordination, balance, and command-following ability. The observed improvement also highlights that participatory and contextual training rooted in the actual needs of the community can foster a relevant and impactful learning process. Stick gymnastics, as a form of physical activity, is not only easily applicable but also inclusive, making it suitable across diverse age groups and fitness levels. The integration of conceptual explanation, practical demonstration, and supplementary video tutorials further enhances the sustainability of the training outcomes.

In light of these achievements, it is recommended that stick gymnastics training be adopted as a broader community-level intervention model across neighborhood

associations (RT/RW), subdistricts, and other community groups. Follow-up actions in the form of regular coaching or advanced training are necessary to maintain physical activity consistency. Moreover, the development of accessible learning materials such as modular guides and video content should be encouraged to support independent learning and long-term community engagement.

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