



Analysis of Forward Roll Skills of Grade XI Students in Floor Gymnastics Learning

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Abstract: Floor gymnastics is an essential component of physical education that develops students' motor skills, flexibility, balance, coordination, and body control. One of the fundamental techniques taught in senior high school is the forward roll. However, many students still experience technical difficulties when performing this movement correctly. This study aimed to analyze the forward roll skills of Grade XI students at SMA Negeri 1 Hamparan Perak and identify factors contributing to movement errors. The research employed a descriptive quantitative design involving 30 Grade XI students selected using purposive sampling. Data were collected through direct observation using a validated observation sheet consisting of three assessment aspects: the initial position, movement execution, and final position. The results showed that most students were categorized as Poor (46.7%), while only 13.3% achieved the Very Good category. The most common errors involved incorrect head position, insufficient leg propulsion, improper hand placement, and poor body coordination. These errors were influenced by limited practice opportunities, inadequate understanding of movement techniques, students' fear of injury, insufficient facilities, and limited corrective feedback from teachers. Therefore, improving instructional strategies through demonstrations, repeated practice, and continuous feedback is recommended to enhance students' mastery of forward roll techniques in floor gymnastics learning.

Keywords: Forward Roll; Floor Gymnastics; Physical Education; Movement Analysis; Senior High School

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INTRODUCTION

Several recent studies have demonstrated the importance of selecting appropriate instructional strategies in gymnastics learning. Kurniawan et al. (2025) reported that the application of the practice teaching style significantly improved elementary school students' learning outcomes in forward roll gymnastics. Their findings indicate that repeated practice accompanied by teacher guidance enhances students' mastery of movement techniques.

The integration of technology has also contributed positively to gymnastics learning. Handayani et al. (2026) found that Android-assisted gymnastics learning media significantly improved students' backward roll skills compared to conventional instruction. This finding suggests that digital learning media can facilitate students' understanding of movement sequences and increase learning engagement.

Students' psychological conditions also influence gymnastics performance. Mahadevi and Indriarsa (2024) revealed that the use of inclined-field learning media effectively reduced students' anxiety while improving forward roll learning outcomes. Lower anxiety enables students to perform movement techniques with greater confidence and coordination.

Biomechanical studies further explain that mastering gymnastics skills requires the development of proper movement patterns. Sano and Kokudo (2022) emphasized that proficient gymnastics performance is characterized by coordinated body positioning, effective body rotation, and appropriate movement timing. These movement characteristics are also fundamental to successful forward roll execution.

Moreover, Veličković et al. (2025) demonstrated that acrobatics-based physical education programs significantly improve adolescents' motor fitness, balance, flexibility, and coordination. Such findings support the inclusion of gymnastics activities in school curricula to enhance students' motor development.

Instructional media also contribute to improving gymnastics achievement. Huda et al. (2026) found that picture-card learning media effectively improved students' forward roll learning outcomes by helping learners understand movement sequences more clearly. Although conducted in different educational settings, the findings are relevant to gymnastics instruction at the senior high school level.

Research conducted by Arhesa and Ma'mum (2023) further showed that appropriate teaching methods significantly improve students' mastery of motor skills in physical education, particularly in swimming instruction. These findings reinforce the importance of selecting suitable learning methods for developing students' motor competence across various physical education materials, including floor gymnastics.

Based on previous studies, it can be concluded that students' mastery of forward roll techniques is influenced by instructional strategies, learning media, psychological readiness, movement practice, and teacher feedback. However, limited studies have specifically analyzed the technical errors made by senior high school students during forward roll learning. Therefore, this study aims to analyze students' forward roll performance and identify the factors contributing to movement errors during floor gymnastics instruction.

METHOD

This study employed a descriptive quantitative research design to analyze students' ability to perform the forward roll movement during floor gymnastics learning. The descriptive quantitative approach was selected because the study aimed to describe objectively the level of students' movement skills based on observable performance without manipulating any variables.

The research was conducted at SMA Negeri 1 Hamparan Perak, Deli Serdang Regency, North Sumatra, from 4 June to 14 June 2025. The population consisted of 308 Grade XI students enrolled in the 2024/2025 academic year. A sample of 30 students was selected using the purposive sampling technique, with the criterion that participants had attended floor gymnastics learning activities and were willing to perform the forward roll movement during data collection.

The research instrument consisted of an observation sheet designed to evaluate students' forward roll performance. The assessment instrument included three movement components, namely initial position, movement execution, and final position. Each component contained several performance indicators that were scored according

to predetermined assessment criteria. Prior to data collection, the instrument was validated through expert judgment by lecturers specializing in physical education and gymnastics instruction to ensure content validity.

Data collection was carried out through direct observation and video recording while students performed the forward roll individually. The use of video recordings enabled repeated observations to improve scoring accuracy and minimize observer bias. Each student's performance was evaluated according to the observation rubric.

The collected data were analyzed using descriptive statistical analysis by calculating frequencies and percentages for each performance category. Students' performance was classified into six categories: Very Good, Good, Fair, Poor, Very Poor, and Unable to Perform. The percentage of each category was calculated using the following formula:

$$P = \frac{F}{N} \times 100\%$$

Where:

- P = Percentage
- F = Frequency
- N = Total number of respondents

The findings were then interpreted descriptively to identify dominant technical errors and factors affecting students' performance during forward roll learning.

RESULT AND DISCUSSION

Result

Observation results indicated that students' forward roll skills varied considerably. Most participants were categorized as having Poor performance, indicating that many students had not yet mastered the fundamental movement techniques.

Table 1. Distribution of Students' Forward Roll Performance

Performance Category	Score	Frequency	Percentage (%)
Very Good	39–45	4	13.3
Good	32–38	2	6.7
Fair	24–31	7	23.3
Poor	16–23	14	46.7
Very Poor	8–15	3	10
Unable to Perform	0–7	0	0
Total		30	100

The findings indicate that nearly half of the students (46.7%) demonstrated poor forward roll performance. Only four students (13.3%) successfully executed the movement according to the assessment criteria.

Based on observational analysis, several technical errors were consistently identified during students' performances.

The most common errors included:

1. Incorrect head position during rolling, causing the neck or head to contact the mat directly.
2. Weak leg propulsion that prevented students from completing the rolling movement smoothly.

3. Improper hand placement resulting in unstable body support.
4. Poor coordination between upper and lower body movements.
5. Failure to maintain balance when finishing the movement.

These technical deficiencies reduced movement quality and prevented students from performing an efficient forward roll.

Discussion

The findings of this study support the research conducted by Kurniawan et al. (2025), who reported that practice teaching styles significantly improve students' forward roll learning outcomes. The dominance of students in the poor performance category observed in the present study indicates that learning activities should include more structured and repetitive practice sessions under teacher supervision.

The present findings are also consistent with Mahadevi and Indriarsa (2024), who demonstrated that reducing students' anxiety through inclined-field learning media improves forward roll performance. Many students observed in this study appeared hesitant and fearful while performing the movement, suggesting that psychological factors remain an important obstacle in gymnastics learning.

Technological innovations may also contribute to improving learning outcomes. Handayani et al. (2026) reported that Android-assisted gymnastics learning media significantly increased students' backward roll skills. Similar digital media may be adapted to forward roll instruction by providing video demonstrations, movement analysis, and independent learning opportunities outside classroom sessions (Sianipar, N. S. U., Usman, K., Sari, I. E. P., & Karo, A. A. P. K, 2025).

From a biomechanical perspective, Sano and Kokudo (2022) explained that successful gymnastics performance requires efficient movement patterns characterized by coordinated body alignment and controlled rotation. The technical errors identified in this study particularly incorrect head positioning and inadequate body coordination indicate deficiencies in these fundamental movement patterns.

Furthermore, Veličković et al. (2025) concluded that acrobatics-based curricula improve adolescents' motor fitness, flexibility, balance, and coordination. These physical components are essential prerequisites for performing forward rolls successfully, suggesting that conditioning exercises should accompany gymnastics instruction.

Instructional media also play a significant role in facilitating learning. Huda et al. (2026) found that picture-card learning media effectively improved students' understanding of forward roll techniques, while Arhesa and Ma'mum (2023) emphasized that appropriate teaching methods significantly improve students' mastery of motor skills in physical education. Therefore, combining demonstrations, visual media, repetitive practice, and constructive feedback is expected to improve students' forward roll performance more effectively.

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CONFLICT OF INTEREST

The author declares that there is no conflict of interest regarding the publication of this research. The research was conducted independently without any commercial or financial relationships that could influence the study's findings.

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