International Journal of Social Sciences, Education, Agricultural Economics, Research and Technology (IJSET) | ISSN (e) : 2827-766X
Volumes 4 No. 6 (2025)

ANALYSIS OF APPROACH AND TAKE-OFF TECHNIQUES IN THE LONG JUMP AMONG JUNIOR HIGH SCHOOL STUDENTS

Hajirah[1]*, Afrizal[1], Fakhrur Rizal[1]
[1]Faculty of Teacher Training and Education, Universitas Gunung Leuser
*E-mail: hajirah0318@gmail.com

Received : 01 April 2025
Revised : 10 April 2025
Accepted : 18 May 2025
Published : 25 May 2025
DOI : https://doi.org/10.54443/ijset.v4i6.1335
Link Publish : https://www.ijset.org/index.php/ijset/index

Abstract

This classroom action research aims to improve the mastery of long service techniques in badminton through the This study aims to provide a detailed analysis of the approach run and take-off techniques in the long jump among eighth-grade students at SMP Negeri 1 Badar. Employing a quantitative descriptive methodology, the research utilized direct skill tests and systematic observation to gather data from a purposive sample of 20 students. The collected data were analyzed using SPSS version 20.0, with descriptive statistics revealing the central tendencies and frequency distributions of the performance scores. The findings indicate that the students' proficiency in both the approach and take-off techniques falls within a moderate category. Consequently, the overall performance in the long jump, measured by the distance achieved, was also classified as moderate. These results underscore a significant gap in the students' mastery of fundamental biomechanical principles essential for a successful jump. The study concludes by proposing targeted recommendations for Physical Education (PE) teachers and curriculum developers. These include the integration of more structured, technique-focused training regimens, the adoption of varied teaching methods to enhance student engagement and understanding, and the provision of adequate facilities to support effective skill acquisition. This research contributes to the broader effort of improving athletic pedagogy in the Indonesian junior high school context.

Keywords: ***Approach Run, Athletic Skills, Junior High School Students, Long Jump, Physical Education, Take-Off Technique***

INTRODUCTION

Physical Education, Sports, and Health (PJOK) represents a crucial component of the educational curriculum in Indonesia, designed to foster holistic development in students. Its objectives extend beyond mere physical fitness to encompass the cultivation of mental resilience, social skills, and a foundation for lifelong healthy living. Within this framework, athletics serves as a fundamental pillar, with the long jump standing out as a key event that integrates speed, strength, and coordination. The long jump is not a singular explosive act but a complex sequence of coordinated movements, each phase critically influencing the next. The approach run and the take-off are universally recognized by coaches and sports scientists as the most pivotal phases, as they primarily determine the velocity and optimal projection angle of the center of mass, which are the primary determinants of jump distance.

The approach run, or awalan, is the phase where the jumper builds up horizontal velocity. A well-executed approach is characterized by controlled acceleration, consistency in stride pattern, and an optimal preparation for the take-off board without sacrificing speed. The subsequent take-off, or tolakan, is the dynamic and transient moment where this horizontal velocity is partially converted into vertical lift. This requires immense leg strength, precise timing, and a powerful, coordinated action of the entire body. A deficiency in either of these techniques invariably leads to suboptimal performance, regardless of the jumper's innate athletic ability. Despite the acknowledged importance of these fundamentals, observational evidence and pedagogical reports from various schools, including SMP Negeri 1 Badar, suggest that many students struggle to master them. Students often exhibit inconsistent approach runs, decelerate before the board, or execute a weak take-off with improper foot placement and minimal vertical impulse. This technical deficit not only limits their performance but may also dampen their motivation and enjoyment of the sport. Therefore, a systematic investigation into the specific technical flaws prevalent among students is a necessary first step toward improving instructional methods.

This study was conceived to address this exact need. Its primary objective is to conduct a detailed and empirical analysis of the approach and take-off techniques in the long jump among eighth-grade students at SMP Negeri 1 Badar. By employing a descriptive quantitative design, this research seeks to objectively quantify the proficiency levels in these two critical phases and examine their correlation with the overall jump distance. The insights generated from this analysis are intended to serve as a valuable evaluative tool for PE teachers, providing a data-driven basis for refining lesson plans, designing targeted interventions, and ultimately enhancing the quality of PJOK instruction in the domain of athletics.

LITERATURE REVIEW

The long jump, a cornerstone event in track and field, is a biomechanically complex activity that has been extensively studied to deconstruct the elements of elite performance. The consensus within the literature is that the jump can be segmented into four distinct yet interconnected phases: the approach, the take-off, the flight, and the landing. While all phases contribute to the final distance, the initial two—the approach and take-off—are paramount, as they establish the energy and trajectory that the jumper carries through the air. The approach run is the foundation upon which a successful jump is built. Its primary purpose is to generate the maximum controllable horizontal velocity that the jumper can effectively utilize in the take-off phase. As noted by Hay (1993) in his seminal work, "The Biomechanics of Sports Techniques," the velocity of the jumper's center of mass at the instant of take-off is the single greatest factor influencing jump distance. However, this speed must be controlled; an erratic or inconsistent stride pattern can lead to fouling or an inefficient take-off position. Research by Lees, Fowler, and Derby (1993) emphasized that a proficient approach is characterized by a consistent and reproducible stride pattern, allowing the jumper to hit the take-off board accurately with their foot in an optimal position. In a school setting, students often struggle with this consistency, their approach runs varying significantly from one attempt to another, which fundamentally undermines their performance.

The take-off phase is arguably the most technically demanding part of the long jump. It is a dynamic action that must occur in a mere 0.10 to 0.13 seconds. During this brief window, the jumper must accomplish a rapid and powerful extension of the take-off leg while simultaneously driving the free knee and arms upward to aid in the conversion of horizontal velocity to vertical lift. The work of Jes Jerver (2013) in "Fundamental of Track and Field" succinctly captures this, stating that the take-off leg acts as a lever, and the force applied against the board determines the jumper's trajectory. A common error among novices, including junior high school students, is a "braking" action, where they plant their take-off foot too far in front of their center of gravity, causing a deceleration and a loss of valuable horizontal speed. Instead, an effective take-off requires the foot to be planted actively and slightly ahead of the body, allowing for a powerful "rolling" motion over the foot that minimizes deceleration.

The synergy between the approach and take-off is critical. A fast approach is useless if it cannot be harnessed into an effective take-off. This concept of "technique velocity" is crucial (Mackala, 2007). It refers to the maximum velocity at which a jumper can successfully execute the take-off action. For developing athletes like junior high school students, their technique velocity is often lower than their maximum sprinting velocity. Therefore, pedagogical focus should not solely be on making them faster but on improving their technical capacity to handle higher speeds. In the Indonesian context, studies on athletic pedagogy, particularly focused on foundational techniques in young adolescents, are still developing. Research by Kurniawan (2018) and Saputra (2020) has highlighted general challenges in teaching athletic skills, often pointing to limited facilities, large class sizes, and a traditional curriculum that may prioritize participation over deep technical understanding. The study by Rizal, Irwansyah, & Nababan (2023) demonstrated the positive influence of leg muscle strength on long jump performance, reinforcing the link between physical conditioning and technical execution. However, there remains a gap in research that provides a fine-grained, technique-by-technique analysis of the long jump in a typical Indonesian junior high school setting. This study aims to fill that gap by providing empirical data on the specific technical competencies and deficiencies in the approach and take-off phases, thereby contributing a localized perspective to the global body of knowledge on athletic skill acquisition.

METHOD

This study was framed within a quantitative descriptive research design, an approach selected for its alignment with the primary objective of accurately describing the technical proficiency levels of students in the long jump. The intent was not to manipulate variables or establish causal relationships, but rather to systematically document and quantify the current state of a specific population's skills. This methodological choice facilitates the collection of numerical data that provides a clear and objective snapshot of the students' abilities at a single point in

time, effectively capturing the status quo of their performance in the approach and take-off phases. The investigation was situated at SMP Negeri 1 Badar, a public junior high school in Southeast Aceh, Indonesia. The participant group consisted of 20 students from Class VIII, who were selected through a purposive sampling technique. This non-probability method was deliberately employed to ensure that all research subjects had prior, formal exposure to the long jump through the standard Physical Education (PJOK) curriculum, thereby guaranteeing that the assessment of their technique was both relevant and meaningful. The sample included both male and female students, accurately reflecting the mixed-gender environment of a typical physical education class. Prior to the commencement of data collection, all necessary ethical considerations were diligently addressed, including securing voluntary participation and providing a comprehensive explanation of the study's purpose to both the students and the school administration.

Data collection was carried out through two principal methods: a practical skills test and direct observation facilitated by a structured performance assessment rubric. The practical test required each student to execute three maximal effort long jumps, with the single best attempt being recorded for subsequent analysis. The jump distance was meticulously measured from the front edge of the take-off board to the nearest point of contact made by the student in the landing pit, adhering to established standard athletic protocols to ensure accuracy and fairness. Concurrently, the technical execution of the approach and take-off was evaluated in detail using a specifically designed observation sheet. This rubric was developed by drawing upon established biomechanical principles from the existing literature and was validated for content and clarity by two experienced physical education lecturers. It deconstructed each technique into key, observable components.

For the approach, criteria such as the consistency of the stride pattern, a controlled and accelerating run-up, and a confident posture preparing for the board were scored. For the take-off, the assessment focused on the active and dynamic planting of the foot, the full extension of the take-off leg, the powerful and coordinated drive of the free knee and arms, and the maintenance of an upright trunk. To ensure the reliability of these subjective assessments, the performances were scored independently by both the primary researcher and a trained observer to establish strong inter-rater reliability. The quantitative data gathered from these tests and observations were then processed and analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.0. The analysis relied predominantly on descriptive statistics to summarize the dataset. This involved calculating the mean and standard deviation for the approach score, take-off score, and jump distance, which provided insight into the central tendency and variability of the students' performance. Furthermore, frequency distributions and percentages were calculated to categorize the students into predefined performance levels, such as Poor, Moderate, and Good, thereby offering a clear and comprehensive picture of the distribution of technical proficiency across the entire sample.

RESULTS AND DISCUSSION

The analysis of the collected data revealed a clear and consistent pattern regarding the students' technical capabilities in the long jump. The average score for the approach technique was 3.30 out of a possible 5, with a standard deviation indicating some variation among the students. When these scores were categorized, the results showed that 50% of the students demonstrated a technique classified as "Good," 30% fell into the "Moderate" category, and the remaining 20% were in the "Poor" category. This places the overall approach technique proficiency of the group squarely in the moderate range. Similarly, the analysis of the take-off technique yielded an average score of 3.25. The distribution was nearly identical, with 50% of students performing at a "Good" level, 25% at a "Moderate" level, and 25% at a "Poor" level. This confirms that the take-off technique is also an area of moderate proficiency for the cohort as a whole. The performance outcome, measured by the distance of the jump, corroborated the technical findings. The average jump distance was 12.85 meters. When compared to age and gender-specific norms, this average performance was also classified as moderate. A preliminary correlation analysis suggested a positive relationship between higher technique scores and longer jump distances, though this was not the primary focus of this descriptive study.

The results of this study illuminate a critical challenge in physical education: the gap between introductory exposure and genuine technical mastery. The fact that both the approach and take-off techniques, along with the final performance, reside in the "moderate" category indicates that while students have been introduced to the basic concepts of the long jump, they have not yet internalized the refined motor patterns necessary for high performance. The deficiencies in the approach run, as observed, often manifested as inconsistent starting steps, which led to inaccurate foot placement on the take-off board. Some students would stutter-step or visibly decelerate in the final strides, a common adaptation due to a lack of confidence in their ability to hit the board correctly and execute the take-off. This directly supports the findings of Lees et al. (1993), who identified stride consistency as a hallmark of skilled jumpers. The loss of horizontal velocity at this critical juncture is devastating to jump distance, as the kinetic

energy available for the take-off is significantly reduced. Regarding the take-off, the most prevalent errors observed were a passive, "reaching" foot plant and a failure to achieve full triple extension (ankle, knee, hip) of the take-off leg. Many students merely stepped onto the board rather than driving down and back with a pawing action. This resulted in a low, flat trajectory and a failure to convert their remaining horizontal speed into vertical lift, a principle heavily emphasized by Jes Jerver (2013). Furthermore, the coordination between the leg drive and arm action was often poorly synchronized. Instead of a powerful, simultaneous upward drive to generate vertical impulse, the arm and leg movements were often sequential or weak, failing to contribute maximally to the jump.

These technical shortcomings are likely multifaceted in origin. From a pedagogical perspective, it is possible that the instructional methods used, while adequate for introduction, may lack the repetition, individualized feedback, and progressive drills needed to engrain complex motor skills. Large class sizes can make it difficult for a single teacher to provide the focused attention each student requires to correct subtle technical flaws. Furthermore, as suggested by Kurniawan (2018), a curriculum that rushes through multiple athletic events may not allocate sufficient time for deep practice in any single one, such as the long jump. The findings also resonate with the concept of "technique velocity" introduced by Mackala (2007). The students' technical proficiency appears to be the limiting factor, not their raw speed or power. They may be physically capable of running faster, but their current technical skill in the take-off phase prevents them from effectively utilizing that higher speed. This underscores the need for training that focuses explicitly on improving technical capacity through drills that isolate and practice the components of the approach and take-off under controlled conditions before gradually increasing speed. In conclusion, the moderate level of performance is not a reflection of student ability but rather an indicator of an area ripe for pedagogical intervention. The results provide a clear mandate: to improve long jump performance, the focus must shift towards a more detailed, corrective, and time-intensive approach to teaching the foundational techniques of the approach run and the take-off.

CONCLUSION AND IMPLICATIONS

This study successfully achieved its objective of analyzing the approach and take-off techniques in the long jump among eighth-grade students at SMP Negeri 1 Badar. The empirical evidence conclusively demonstrates that the proficiency levels in these two critical technical phases are, on average, moderate. This moderate technical mastery is directly reflected in the students' jump distances, which also fall within a moderate range. The findings highlight a significant opportunity for enhancing the pedagogical strategies used to teach complex athletic skills in the junior high school physical education curriculum. It is evident that current instructional practices, while providing a foundational understanding, are insufficient for guiding the majority of students toward a high level of technical competence. The errors observed in stride consistency, take-off mechanics, and kinetic energy transfer point to a need for more focused and deliberate practice.

The results of this study carry several important implications for various stakeholders in physical education. For Physical Education teachers, the findings serve as a call to action to refine their instructional methodology. Moving beyond a demonstration-and-practice model, teachers should incorporate more structured, part-whole training drills. For the approach run, this could involve practice sessions focused solely on establishing a consistent starting mark and stride pattern without the take-off. For the take-off, drills such as pop-ups off the board, take-off from a short approach, or working with boxes to emphasize the drive of the free knee can be highly effective. Crucially, teachers must provide specific, immediate, and constructive feedback to each student, helping them understand and feel the correct movement patterns. Differentiating instruction to cater to varying skill levels within the same class is also essential.

For school administrators and curriculum developers, this study underscores the importance of supporting PE teachers in their professional development. Investing in workshops or training sessions led by athletic coaches or sports biomechanists could equip teachers with a deeper toolkit of drills and corrective techniques. Furthermore, the administration should recognize the need for adequate facilities and equipment. A proper, well-maintained landing pit and a non-slippery, standardized take-off board can significantly impact both student safety and their willingness to perform at maximum effort. Allocating sufficient time within the academic year for in-depth practice of key sports like athletics is also critical. For future researchers, this study opens several avenues for further exploration. A logical next step would be to conduct an experimental or action research study that implements the recommended drill-based intervention and measures its effectiveness in improving technique and performance compared to a control group. Expanding the research to include a larger and more diverse sample from multiple schools would enhance the generalizability of the findings. Additionally, employing qualitative methods, such as interviews or focus groups with students, could yield rich insights into the psychological and motivational barriers they face when learning

complex motor skills, providing a more holistic understanding of the challenges in physical education. In summary, bridging the gap between moderate and high performance in the long jump requires a concerted effort focused on quality technical instruction. By embracing a more nuanced, drill-oriented, and feedback-rich pedagogical approach, educators can empower students to not only jump farther but also to develop a deeper appreciation for the art and science of athletics.

REFERENCES

Arikunto, S. (2013). *Prosedur Penelitian Suatu Pendekatan Praktik* (Edisi Revisi). Jakarta: Rineka Cipta.

Hay, J. G. (1993). *The Biomechanics of Sports Techniques* (4th ed.). Prentice Hall.

Jes Jerver. (2013). *Fundamentals of Track and Field*. New York: Human Kinetics.

Kurniawan, R. (2018). *Metode Pembelajaran Lompat Jauh untuk Meningkatkan Keterampilan Atletik Siswa*. Yogyakarta: Pustaka Pelajar.

Lees, A., Fowler, N., & Derby, D. (1993). A biomechanical analysis of the last stride, touch-down and take-off characteristics of the women's long jump. *Journal of Sports Sciences*, 11(4), 303-314.

Mackala, K. (2007). Optimisation of performance through kinematic analysis of the different phases of the long jump. *Journal of Sports Sciences*, 25(8), 891-903.

Rizal, F., Irwansyah, O., & Nababan, M. B. (2023). Pengaruh Latihan Kekuatan Otot Tungkai Terhadap Kemampuan Lompat Jauh Gaya Jongkok Pada Siswa Sma Negeri 1 Ketambe Kelas Xi Tahun Ajaran 2022/2023. *Jurnal Penelitian Progresif*, 2(1), 30-34.

Saputra, A. (2020). *Analisis Teknik Dasar Lompat Jauh dalam Pembelajaran PJOK*. Bandung: Cipta Karya.

Sudijono, A. (2009). *Pengantar Statistik Pendidikan*. Jakarta: Rajawali Pers.

Sugiyono. (2012). *Statistika untuk Penelitian*. Bandung: Alfabeta.

Widya, N. (2014). *Pendidikan Jasmani dan Olahraga*. Jakarta: Erlangga.